SEPTEMBER 18, 1961
Volume 50, No. 19

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OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

AMERICAN DYESTUFF REPORTER

TEXTILE WET-PROCESSING

AATCC CONVENTION ISSUE

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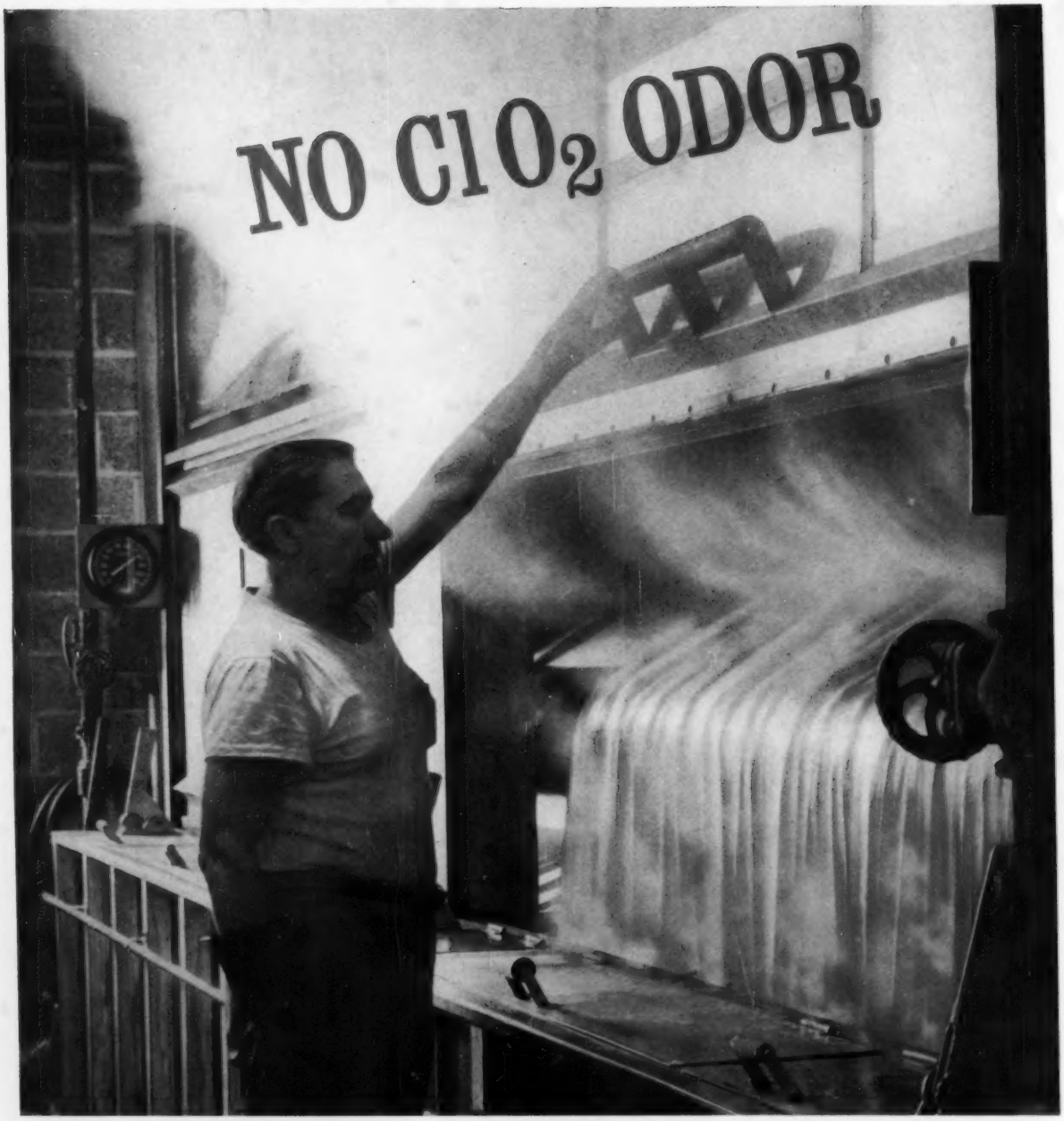

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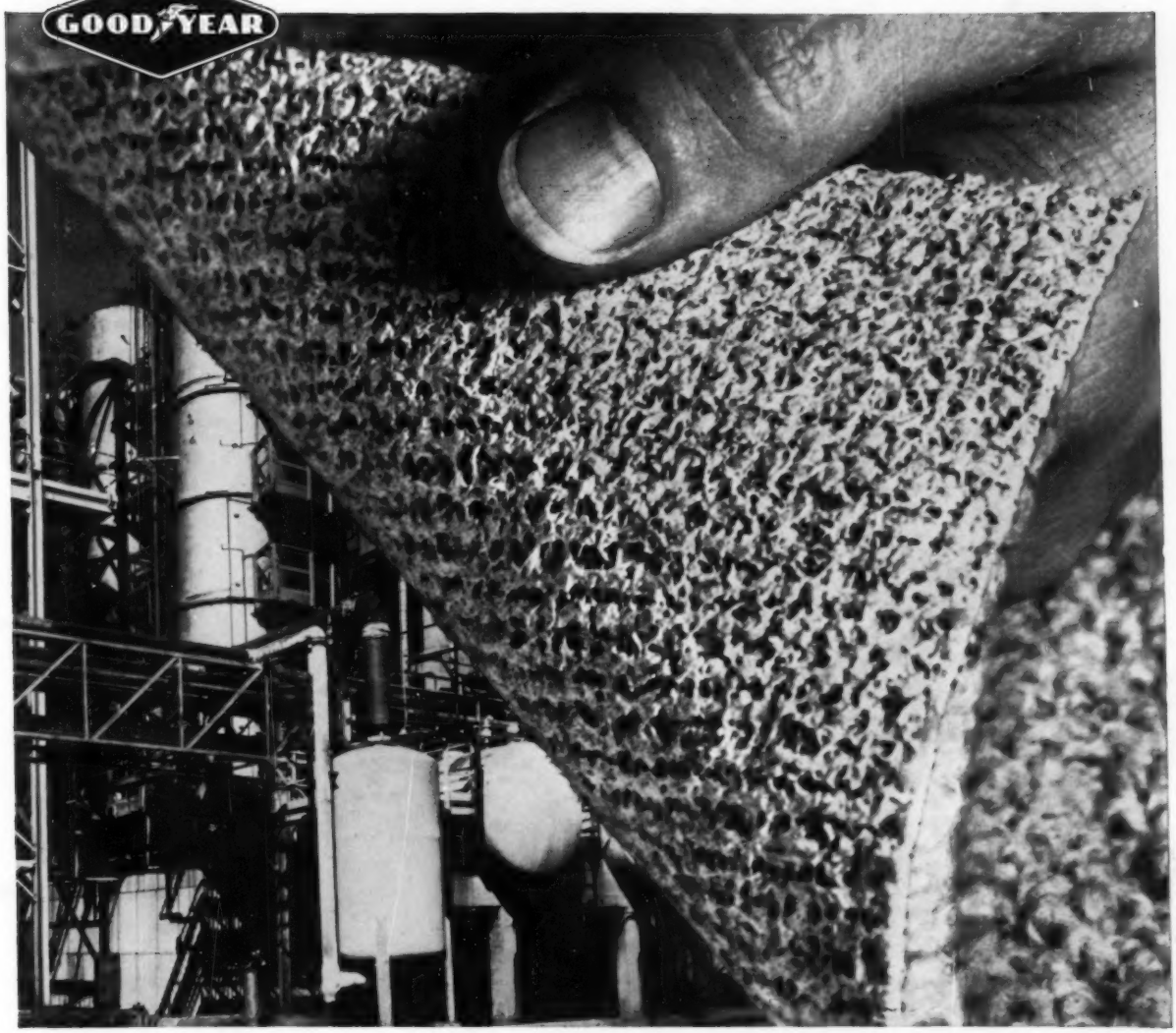

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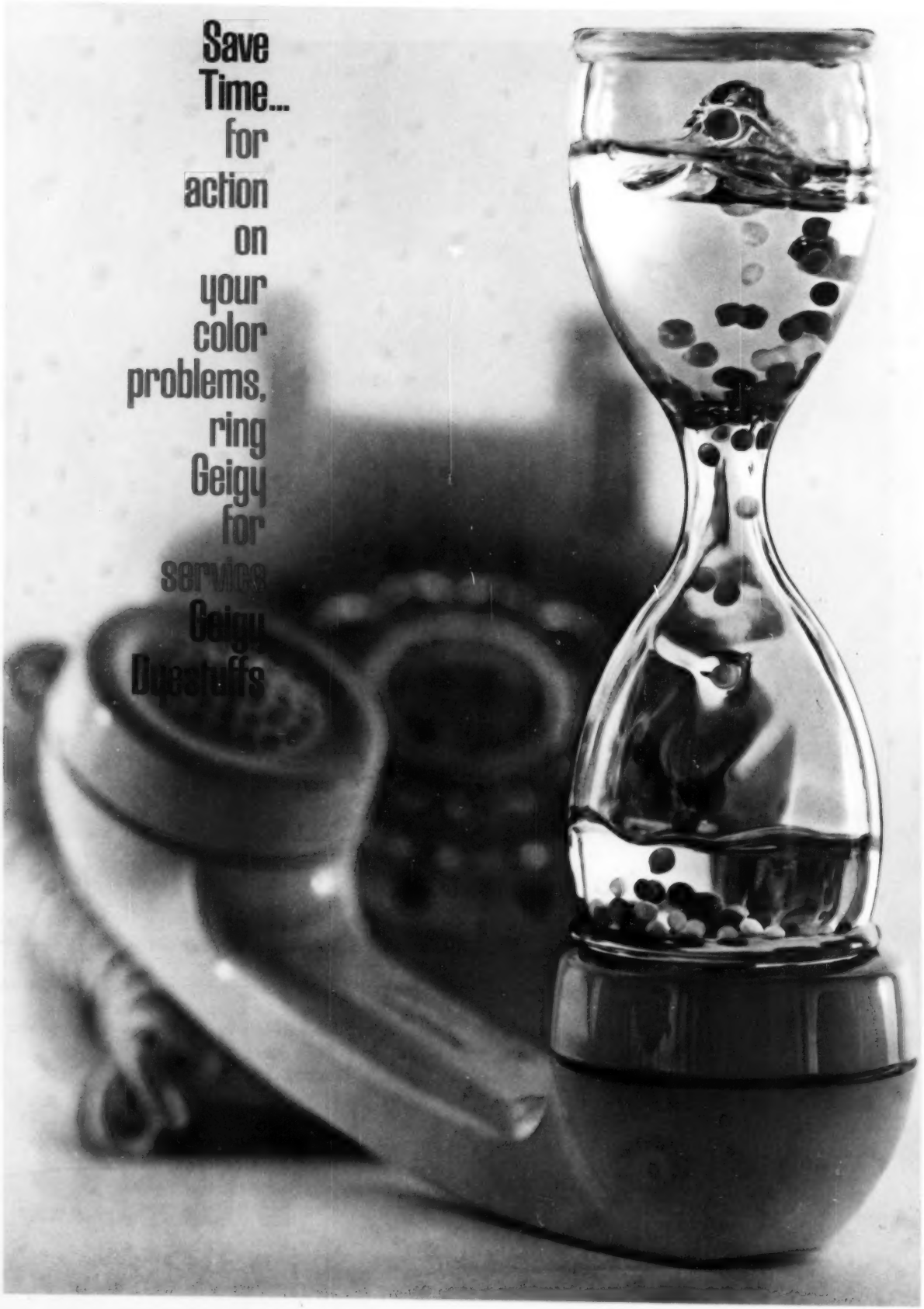
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OFFICIAL
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one of a series in which we present some facts and express some opinions to help textile chemists solve dyeing and finishing problems

The Subject of the Month

The Case of the Tarry Specks

A careful analysis of dyeing procedures unearthed clues that helped solve a mysterious dyeing problem

A well-known dye works in Northern New Jersey recently ran a large volume of triacetate/cotton fabric in a royal blue shade. The dyer had chosen to dye the fabric in a single bath containing both the direct and the acetate dyes. When the lot was on-shade, it was given a simple hot water rinse and fixed while still in the dye box.

Spots Before Their Eyes

In about one out of three lots, specks appeared on the fabric during drying. Both the head finisher and the dyer concluded that one of the acetate dyes, Eastman Blue GP, was tarring out—that large particles of the dye were clinging to the material and, during the heat of finishing, were decomposing. Following this line of reasoning, the dyer switched to another manufacturer's blue. First lot looked fine. Second lot—specks!

At this point, the dyer decided he needed help and called in an Eastman Technical Representative.

Was the Acetate Dye Responsible?

Within the hour, an Eastman man was on the scene following a lot through the complete dyeing and finishing operation. Nowhere in the dyeing process itself was there any evidence of specking. Only after the fabric had gone through the finishing range could the specks be detected. And the man from Eastman reluctantly agreed that they certainly looked like tarred dye formations.

Then, acting on a hunch, the Eastman representative took a piece of the finished fabric and treated it in an acid bath. *The specks disappeared.* This indicated the problem was not caused by undispersed acetate dye, since the acid treatment would not then have cleared the fabric so readily.

Clues Point to the Culprit

On the other hand, the Eastman representative knew that the chemical bond between some fixatives and direct dyes can be broken under acidic conditions, thus implicating those components as the probable source of the specking problem.

In order to pinpoint the problem, however, another dyeing run was begun. Eastman Blue GP was again used but the procedure was changed to include a thorough rinse in a hot salt solution immediately after dyeing. This time *no specks appeared* after the finishing.

Salt Bath Did the Trick

During a more detailed study of the problem, it was found that the fabric underwent considerable fibrillation during the rinsing cycle. The direct dye that bled into the rinse water combined with the fixative when the latter was added to the bath. The reaction of fixative and dye produced a residue, some of which was picked up by the bits of fiber. These particles, being the same color as the fabric itself, were not distinguishable as they clung to the fabric's surface. But when the fabric went through the finishing range, the heat caused the gummy residue to decompose, leaving tarry specks visible.

The presence of salt in the bath stopped the direct dyes from bleeding into the rinse and therefore prevented the formation of dye residue. No dye residue—no pick-up. No pick-up—no specks.

THE PRODUCT OF THE MONTH

Eastman Technical Service

As may be rightly deduced from this story, with every pound of Eastman Textile Dyes there are available the technical resources and extensive experience of a pioneer in fabrics and dyes. Our facilities and knowledge are freely available to help you get the most effective use out of this outstanding line of dyes.

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A JAPANESE-FLAVORED VIEW OF THE BASIC PROBLEMS OF THE AMERICAN TEXTILE INDUSTRY

IN urging the Office of Civil and Defense Mobilization (OCDM) to either dismiss or remand for more detailed information an application for investigation of an alleged threat to "national security" posed by textile imports, the Association on Japanese Textile Imports, Inc, New York trade group, and nineteen associated Japanese groups have stated that the basic problems of the American textile industry are caused by such difficulties as:—

—interregional competition
—interfiber competition
—obsolete equipment and facilities
—consolidations and mergers for various purposes, including tax write-offs
—combining many separate operations into an integrated operation
—fashion and style changes
—new fibers, mixes, and blends, plastics, paper, and nonwoven fabrics
—new processes, such as "wash and wear", etc.

The AJTI, whose membership imports over 70 per cent of the Japanese textiles sold in this country, and the 19 associated organizations virtually represent the entire textile industry of Japan. The aforementioned application for investigation, made under Section 8 of the Trade Agreements Extension Act, was submitted by eleven American textile associations.

The OCDM was asked to either dismiss the application outright, or remand it to the eleven domestic textile groups that petitioned for the investigation for information in detail as prescribed by law and regulation.

The submission stated, "The national security of our country is much too important and too vital to be decided upon the basis of generalized appeals and presumptions put forward by complaining associations under the guise of 'national defense'. If complete adherence to the Rules and Regulations are not insisted upon as prerequisite to any investigation application, it will serve as a dangerous precedent and invitation to other associations and industries to submit summary statements without regard to the requisite fact."

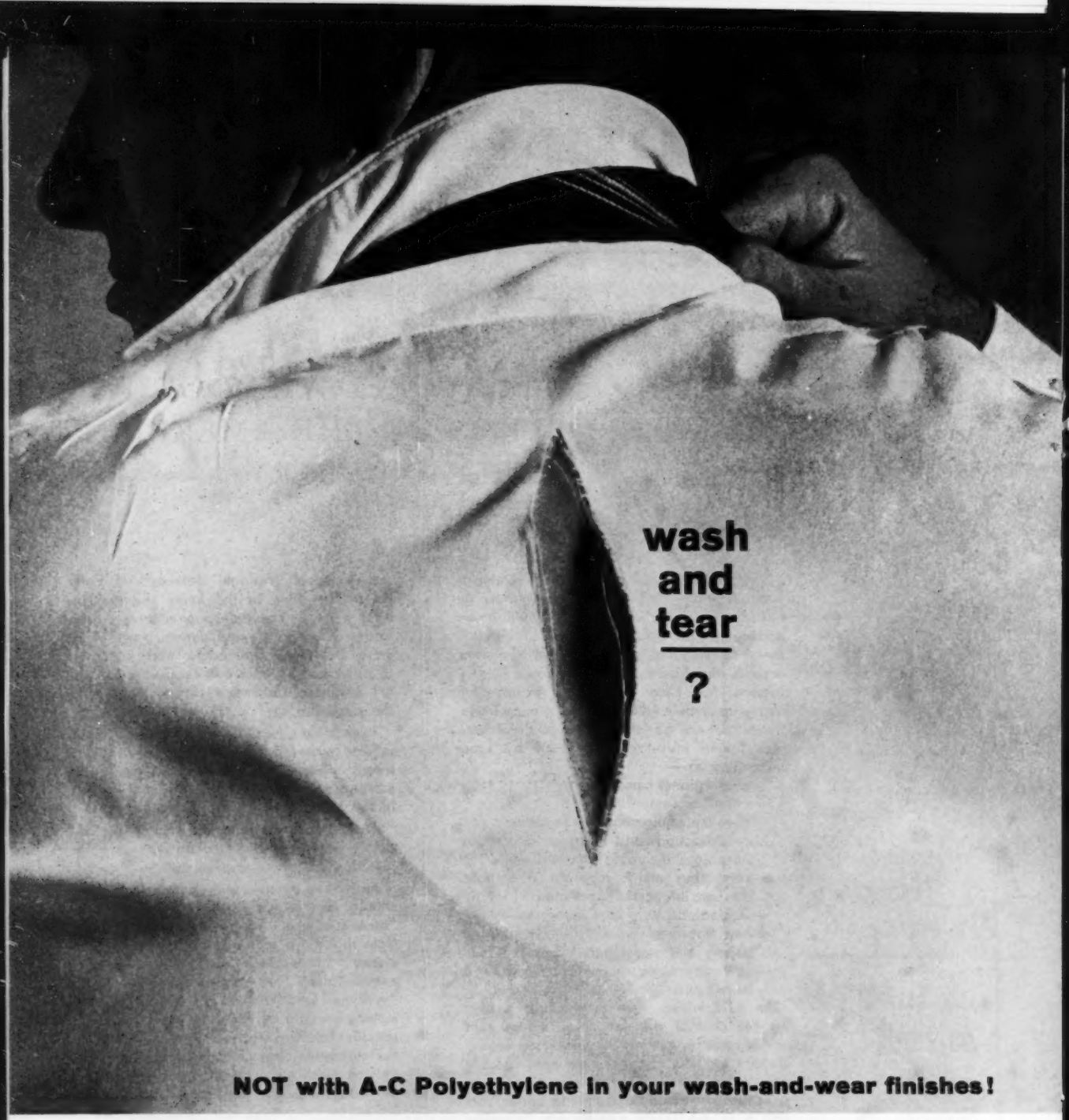
In addition, the brief continued, "Such failure to present factual data is unfair to those opposing the application, making it extremely difficult to evaluate the validity of the claims."

The groups opposing the domestic industry petition submitted other reasons for rejection of Section 8 proceedings.

First, they pointed out, "national security" should not be used as an alternative to "escape clause" proceedings of the Tariff Commission. It was noted though "escape clause" proceedings do not require the extraordinary justification demanded in "national security" pleas, out of sixteen actions brought by the domestic industry on specific textile items since World War II, thirteen were either dismissed by the Commission itself, turned down by the President, or withdrawn by the applicant domestic industries.

In refutation of claims by the domestic industry of less of productive capacity to meet wartime emergency, the OCDM was referred to a study submitted to the Pastore Sub-Committee of the Senate Committee on Inter-State and Foreign Commerce. This study noted that man-hour output in the domestic textile industry rose 70 percent since 1947 and that another 60 percent rise was expected over the next ten years.

We studiously refrain from comment at this time, while inviting comments from our readers, both foreign and domestic.



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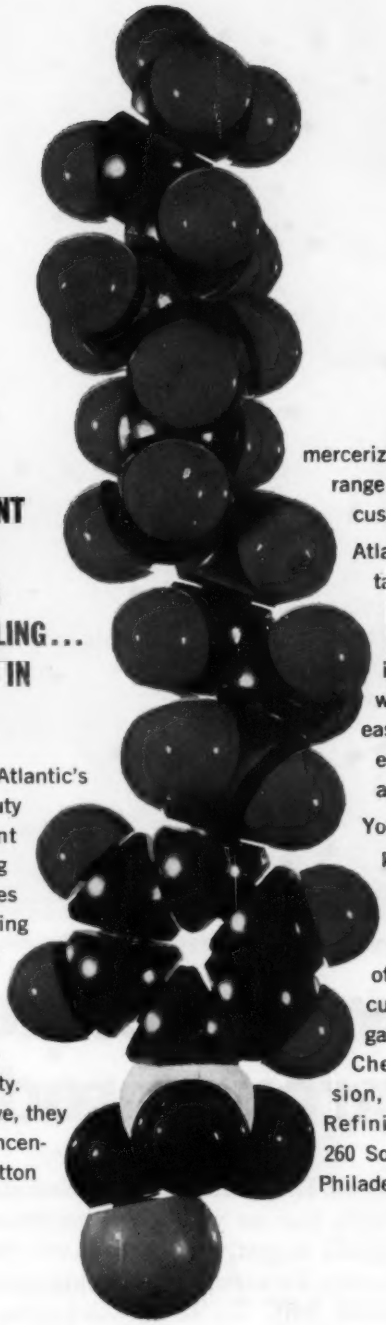

ATLANTIC ULTRAWETS® GIVE YOUR FORMULATIONS CONSISTENT QUALITY AND HELP CUT COSTS IN WOOL BLEACHING • SOAPING OFF • CARBONIZING • DYE LEVELING... ANY SURFACTANT APPLICATION IN WET PROCESSING OF TEXTILES

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Atlantic Ultrawets, with unusually low unsulfonated oil content, provide remarkable cleaning and wetting ability. In concentrations as low as 0.05% active, they are ideal for soaping off wools. In concentrations as low as 0.25% active for cotton mercerizing. Ultrawets are produced in an ideal range of molecular weights to meet your customer's individual problem.

Atlantic Ultrawets offer additional advantages. They are not adversely affected by variations in water quality, remove grease quickly and efficiently. Scouring is possible at lower temperatures. Less water is needed. They are easy to handle, easy to store. And their versatility means economical use in a wide variety of applications.

You are invited to consult Atlantic's experienced sales engineers who are graduate chemists or chemical engineers especially trained in formulations employing any of Atlantic's great variety of Ultrawets. Put this technical and cost-cutting know-how to work without obligation by writing Chemicals Division, The Atlantic Refining Company, 260 South Broad St., Philadelphia 1, Pa.

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Leon Moore (above, left), one of 12 Du Pont textile bleaching representatives, discusses a new Du Pont bleaching process . . .

Here's how Du Pont experience improve product quality

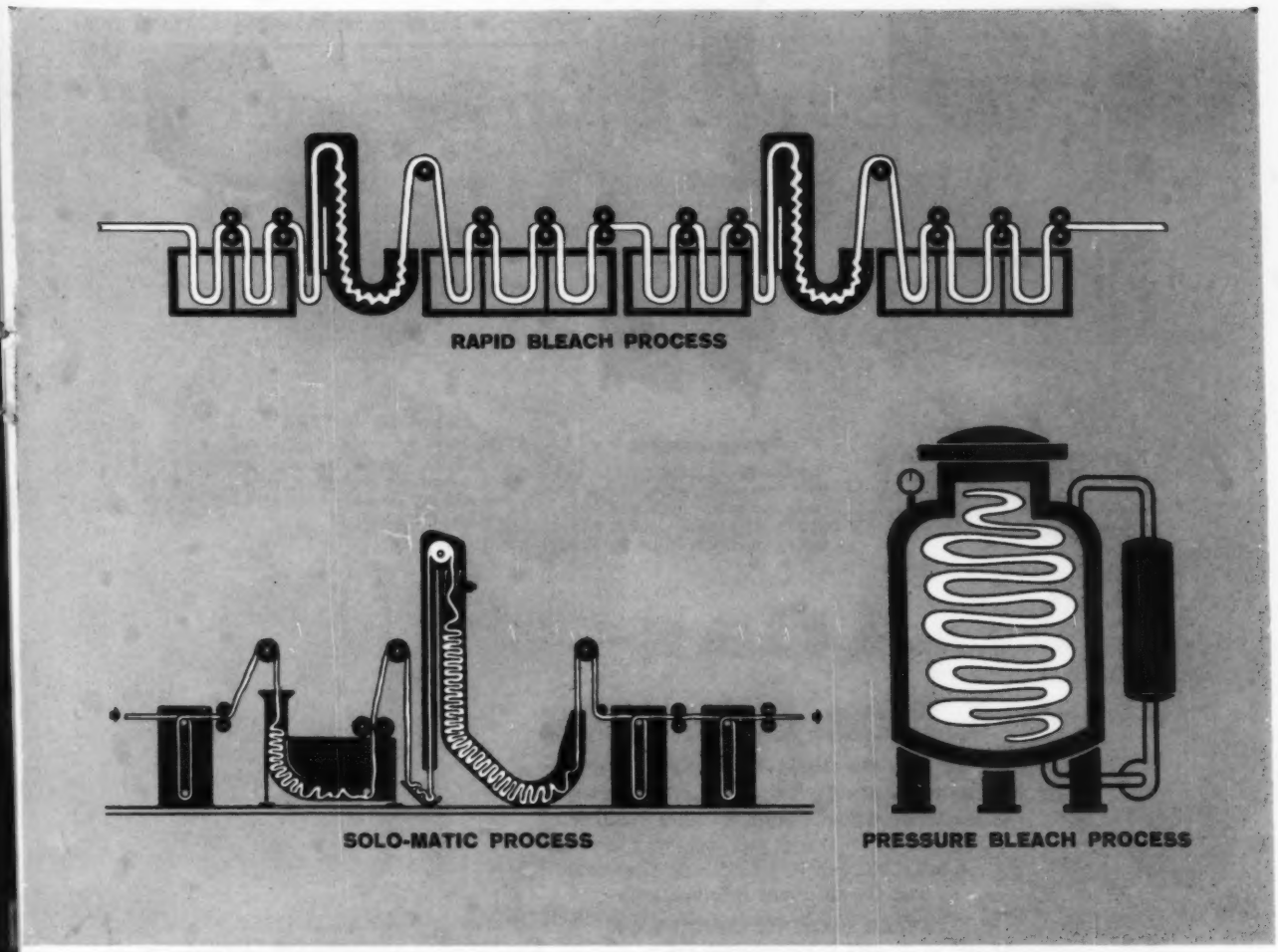
Du Pont technical representatives can bring years of practical textile mill experience to bear on your bleaching operations—and often will suggest ways you can cut costs or improve efficiency. For example, take Leon Moore (pictured above, left), one of Du Pont's twelve highly qualified bleaching specialists. He can help you maintain your processes at peak operating efficiency and also show you how one of Du Pont's new cost-cutting processes can economically fit into your present operation.

If it looks as though a continuous or semi-continuous system may solve your bleaching problems, Leon might suggest *Rapid Bleach*, the process that lowers cloth storage time to 8 minutes in each J-box, improves dyeing quality and eliminates rubmarks, bruises and creases.

If you bleach by a multi-stage, high-speed system, he can explain the advantages of *Solo-Matic* bleaching. This single-stage process can double your production in the same space, using present equipment—is currently performing satisfactorily in many mills.

Perhaps you're interested in kiers or package systems. Then Leon could tell you about *Pressure Bleach*, which cuts process time up to 50%, and doubles your production in the same space, using your present equipment.

ALBONE® hydrogen peroxide • **SOLOZONE®** sodium peroxide • **PERDOX®** sodium



These 3 Du Pont processes can help you save time, money and space. Major advantages are listed below.

and service help textile mills ...cut processing costs

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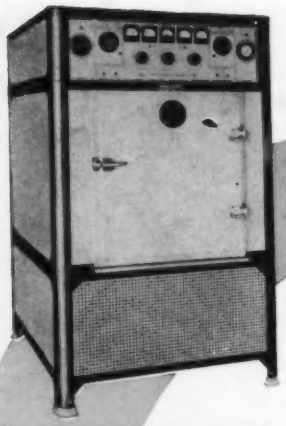

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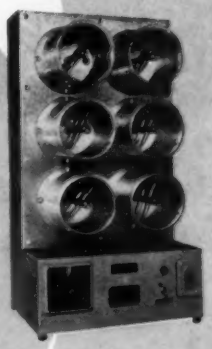

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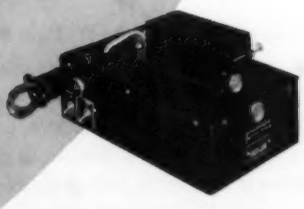

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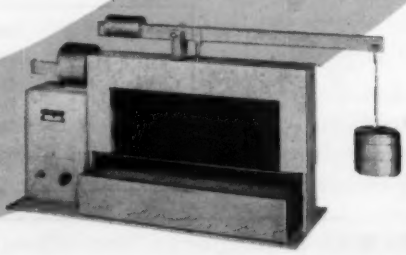

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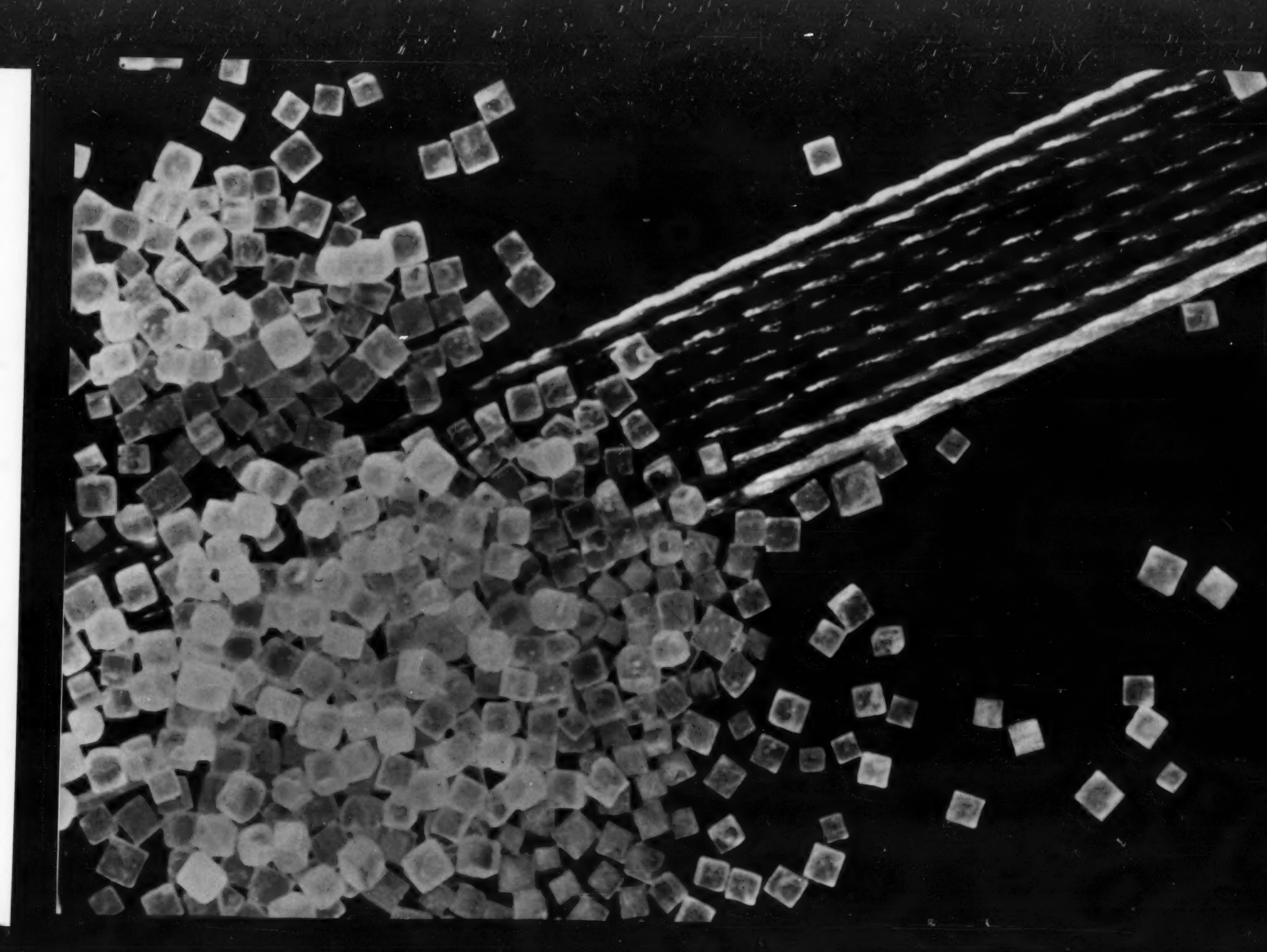
Fiber content of this sample is .....

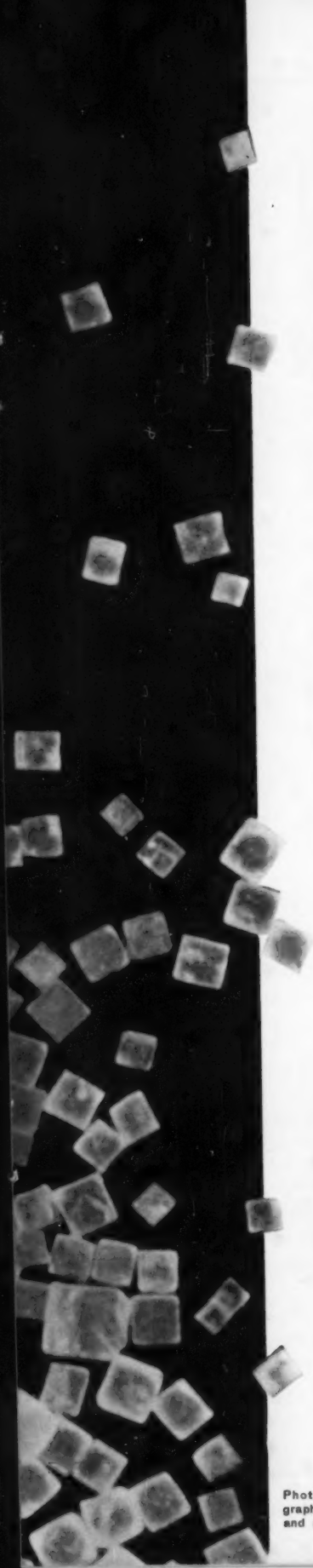
Name ..... Title .....

Company ..... Address .....

City ..... Zone ..... State .....



these crystals capture color



They're Sterling TNA-5®—one of the finest dyeing reagents ever developed—here magnified 20 times. Those "ropes" in the background are size A rayon yarn. Now you can see the remarkably high quality of TNA-5 crystals. They're sparkling clear. They have uniform structure. And because TNA-5 is more than 99.95% pure, you get brilliant colors and a smoother finish every time. Fabrics and yarn take on a new luster, rich hues. Dye manufacturers recommend TNA-5's use in neutral or alkaline dye baths; in direct sulphur, or naphthol dyes; in the dyeing of cotton, rayon or any blend of these with wool. TNA-5 can save you money, too. It replaces Glauber's Salt pound for pound yet costs less. And, because TNA-5 forces more dye out of solution than other reagents, you'll use 5-10% less dyestuff annually. For more savings—use the TNA-5 dissolver. It converts bulk TNA-5 into fully saturated brine. Out-of-the-way pipes deliver the brine to the dyeing machines (shown above). There's no handling, no labor expense.

The only supplier of TNA-5, International is also the textile industry's main source of salt for water softeners, wet finishing and dyeing. We produce all grades of highest-quality evaporated and rock salt, as well as brine-producing dissolvers and Lixators. We can custom-design systems for your plant that deliver brine automatically to points of use. For technical assistance on TNA-5, or information on our patented "Lixate" brine process for regenerating water softeners and dyeing, contact nearest district office.

HEADQUARTERS: CLARKS SUMMIT, PA. • DISTRICT OFFICES:
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INTERNATIONAL STERLING SALT SALT COMPANY

"A STEP AHEAD IN SALT TECHNOLOGY"

Photographer Herbert Loebel shot this macrophotograph with a Hasselblad 1000F with bellows attachment and a Tessar f:2.8 lens, 1 sec., f:22, Kodacolor 120.

We'll Be There For The First Time . . .

With the recent development of Spencer "Poly-Em®" Polyethylene Latex, Spencer Chemical Company becomes a new supplier to the textile industry.

This is the first year that Spencer representatives will be on hand at the annual A. A. T. C. C. Convention. So, we are anxiously looking forward to meeting you all September 27 through 29.

Chances are, you've already heard about the superior performance of Spencer "Poly-Em" Polyethylene Latex as a textile softener and in other uses. But, we're sure you want to know much more about just how Spencer "Poly-Em" can be applied to your specific product. That's why Spencer Representatives will be in Buffalo—to answer your questions.

SPENCER®

SPENCER CHEMICAL COMPANY

Dwight Bldg. • Kansas City, Missouri

BLANCOPHOR optical brighteners bring you a "bull's eye target" as to results. The reliability of these products and the wide range in which they are offered allow you to meet just about every specification of substantivity, solubility, and hue of fluorescence. Consult the chart below to select the Blancophor products that are most promising for your purposes. Then check the coupon and forward it to General Dyestuff Company for prompt service on samples and literature.

For bright whites and sparkling pastels.

BLANCOPHOR® BRIGHTENERS

BLANCOPHOR PRODUCT	SUBSTANTIVITY: cotton, rayon, other cellulosics	SUBSTANTIVITY: nylon, wool, acetate rayon, acrylics	SOLUBILITY IN WATER (unless otherwise indicated)	DAYLIGHT HUE (greenest hue = 1, pinkest hue = 5)	DYEING TEMPERATURE (pH 7)	EXHAUST RATE	LEVELING
AW (powder)		+	1% in H_2SO_4	5	130°F*	Fast	Good
CB-32 (liquid)	+		15%	1	70-130°F	Moderate	Excellent
FFG (powder)		+	1%	5	130°F*	Fast	Good
GS-33 (liquid)	+		15%	3	70-130°F	Moderate to Fast	Very Good
HS-31 (liquid)	+		15%	4	70-130°F	Moderate	Excellent
HS-71 (powder)	+		15%	4	70-130°F	Moderate	Excellent
MS-31 (liquid)	+		10%	2	70-130°F	Fast	Good
MS-72 (powder)	+		10%	2	70-130°F	Fast	Good

*Acrylics require a dyeing temperature of 180-200°F.

gdc gaf

FROM RESEARCH TO REALITY

GENERAL DYESTUFF COMPANY
A DIVISION OF
GENERAL ANILINE & FILM CORPORATION
435 HUDSON STREET • NEW YORK 14, NEW YORK

SALES OFFICES: Charlotte • Chattanooga • Chicago • Los Angeles • New York
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IN CANADA: Chemical Developments of Canada Ltd., Montreal

GENERAL DYESTUFF COMPANY
435 Hudson Street, New York 14, N. Y.

Gentlemen:

Please send me samples of the Blancophor products checked and pertinent literature.

☐ AW ☐ FFG ☐ HS-31 ☐ MS-31
☐ CB-32 ☐ GS-33 ☐ HS-71 ☐ MS-72

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Blancophor brighteners manufactured by General Aniline & Film Corporation are sold outside the United States, by distributors all over the world, under the trademark "Tintofen.®"

HYDRO-PRUF

REG. U.S. PAT. OFF.

SILICONE RESIN

Water Repellent

TRULY DURABLE

NEW...

ANOTHER FIRST FOR ARKANSAS!

HYDRO-PRUF® C (for Cotton)

The most durable silicone water repellent ever produced for cotton—PLUS the finest hand ever achieved!

TRULY DURABLE—will withstand many washings at the boil in the presence of alkaline extenders

STABLE—will not break down on continuous operation—no spots or oily rolls when applied

COMPATIBLE—with most thermosetting resins and color fixatives

EASY TO USE—no extra operations required

NO SHADE CHANGE—even on naphthol dyed cottons

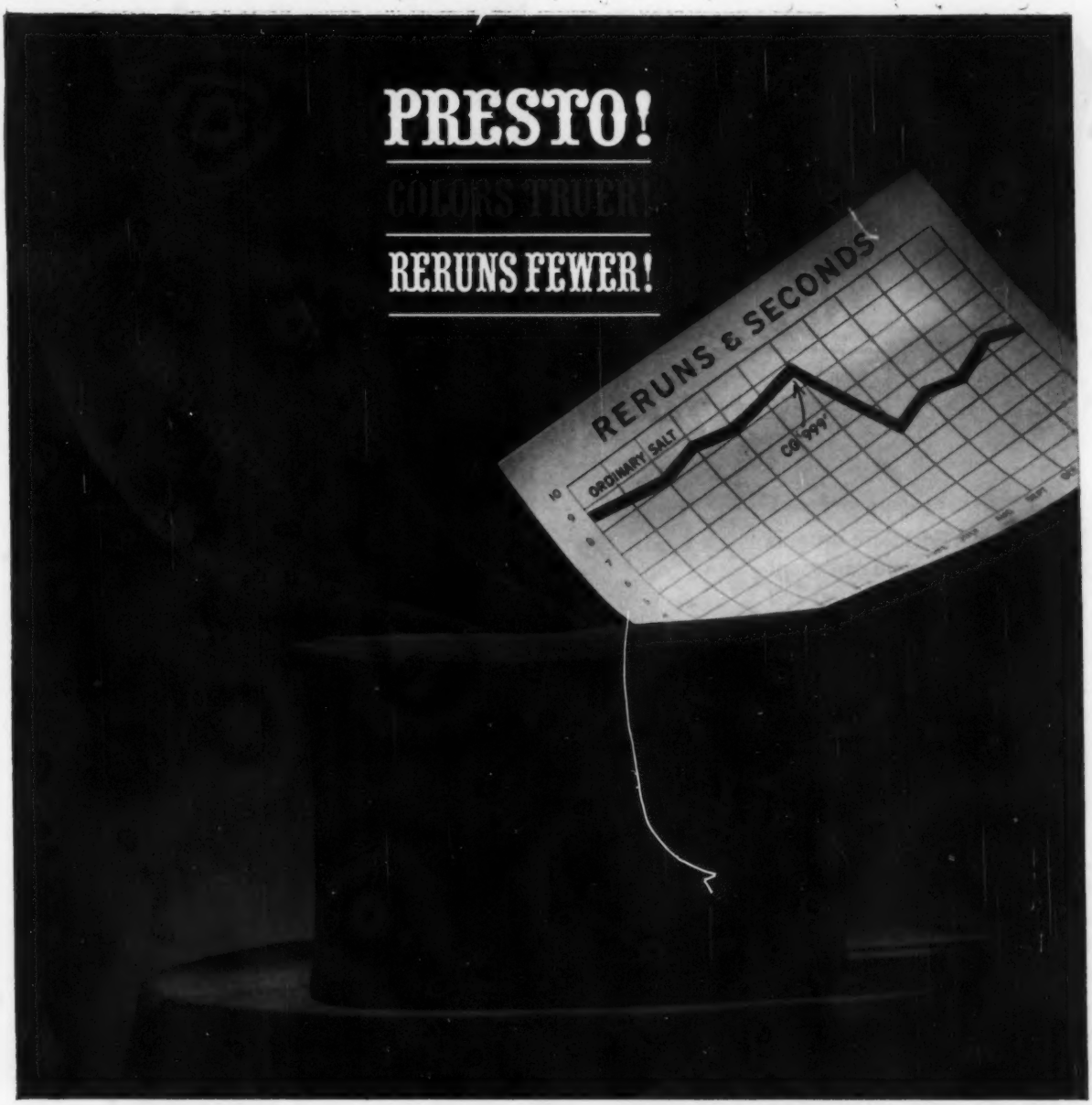
UPGRADE YOUR COTTON FABRICS WITH HYDRO-PRUF C!

Ask for our Technical Service Bulletin on Hydro-Pruf C—a notable achievement of Arkansas research.

ARKANSAS CO., INC.

NEWARK, NEW JERSEY

SERVING THE TEXTILE INDUSTRY FOR OVER 57 YEARS



With Morton Chemical Grade '999' Salt

It's not magic . . . but sometimes the results you get when you switch to high purity Morton Chemical Grade '999' Salt seem almost magicall Colors are truer . . . exactly as the manufacturer intended them to be. And reruns and seconds often drop 50%—as shown by actual records.

With salt of average purity, calcium and magnesium compounds complex dyes and reduce their effectiveness. But with high purity Chemical Grade '999,' you get 99.95% pure sodium chloride with a trace of sodium sulphate—as recommended whenever commercial calcium-free salt is required.

When Cost Is the Determining Factor, Use Morton Purex Salt. Morton Purex Salt is the ideal salt for textile use when high purity is not essential. Purex is guaranteed to have a minimum purity of 99.5%, and to be 100% soluble. Like Chemical Grade '999,' and all other grades of Morton Salt, it is easily and quickly available anywhere in the U.S.

MORTON SALT COMPANY Industrial Div.
Dept. AD-9, 110 N. Wacker Drive, Chicago 6, Ill.

Please send me more information about

- ☐ *Morton Chemical Grade '999' Salt*
- ☐ *Morton Purex Salt*
- ☐ *I would like to talk to a Morton representative about other grades of salt used in the textile industry.*

*Name*_____

*Title*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

You Can't Beat a Berkshire Drum!

Every time a Berkshire drum is delivered to you, you can count on getting a dyestuff of top and unvarying quality. Complete, unified production facilities, all under one roof, manned by specialists in dyestuffs, exclusively, make possible a quality control that safeguards the product and your use of it.

And accompanying each unbeatable Berkshire drum, is a service with a conscience. Berkshire's extensive research facilities and experienced technicians are available to solve your individual dyeing problems and to guide you in the most effective use of products bearing the highly respected Berkshire seal.

Berkshire COLOR & CHEMICAL CO.

WHY IT PAYS YOU TO DEAL WITH BERKSHIRE—

- Specialization — in Dyestuffs, Exclusively
- Completely Unified Manufacturing Plant — from Basic Chemicals — thru Intermediate to Finished Product
- Ultra-Modern Production, Research and Testing Equipment
- Trail-Blazing Scientific and Technical Personnel
- Successful Product Pioneering
- Individualized Problem Solving Service
- Lightning Delivery — from 4 Strategically Located Warehouses
- Highly Satisfied Customers — as Evidenced by Steadily Climbing Sales Curve

Organized to know your dyeing problems — Equipped to solve them!

Executive Offices—The 663 Building, Passaic, N. J., 663 Main Ave., (P.O. Box 1076, Passaic, N. J.)

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COLORS FOR WOOL

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Manufactured by

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Plants:
BAYONNE • NEW JERSEY

What's News in Rubber...

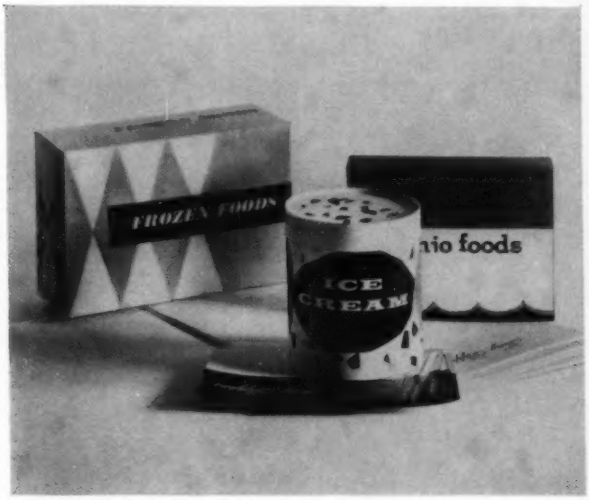
NEW ENJAY BUTYL LATEX plays a vital part in the roofing system of Longway Planetarium, Flint, Michigan.

The benefits of Butyl are now available in stable emulsion form!

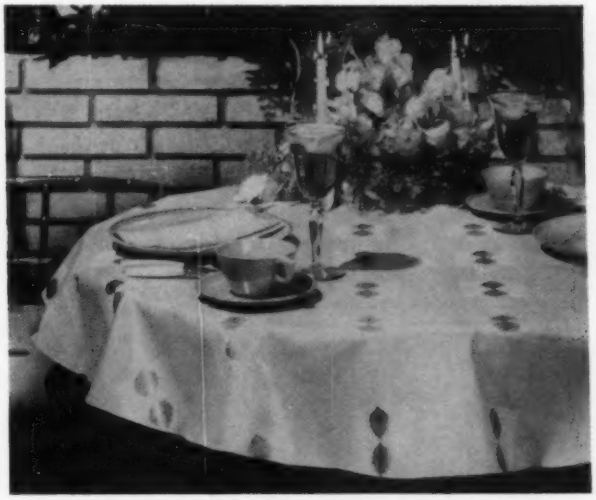
New Butyl Latex roofs the heavens

Now you can get the outstanding properties of Butyl rubber in convenient latex form. New Enjay Butyl Latex is a chemically stable emulsion of 55% solids in water. Properly compounded, it combines the ozone resistance, low-temperature flexibility and low permeability of the base polymer with a high degree of chemical, mechanical and freeze-thaw stability.

Enjay Butyl Latex is odorless, safe and easy to handle; compatible with a wide range of resin and elastomeric emulsions. It can be easily compounded with pigments, fillers, thickeners and tackifiers. Pseudoplastic in nature, it exhibits remarkably low viscosity at high solids levels. Shipped in insulated 8,000- and 10,000-gal. tank cars and 55-gal. steel open-head drums.

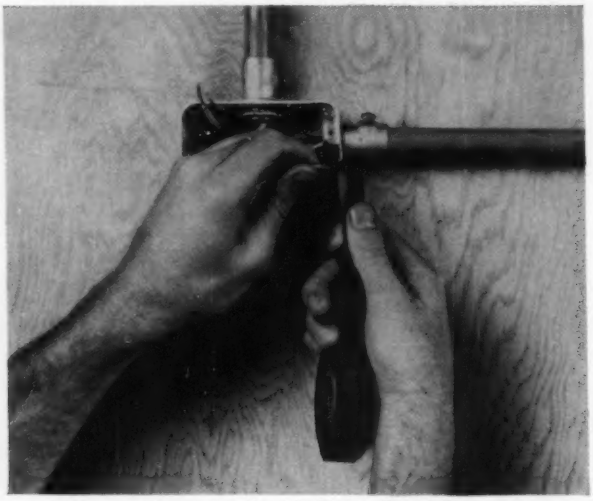


PAPER COATINGS containing Enjay Butyl Latex resist oil and water; improve printability, ink hold-out, brightness and gloss.



TEXTILE TREATING and proofing with Enjay Butyl Latex leaves the fabric surprisingly supple, with a good hand and drape.

TIRE-CORD DIPPING with Enjay Butyl Latex makes possible the all-Butyl tire, which gives the smoothest and safest ride today!



ADHESIVES formulated with Enjay Butyl Latex provide excellent resistance to moisture, aging, oxygen, ozone and chemicals.

ENJAY OFFERS EXPERT TECHNICAL ASSISTANCE

The Enjay Laboratories are always at your service to help you develop new or improved Butyl applications. Enjay technical literature is among the finest in the industry. For your free copy of Bulletin 012 on new Butyl Latex, write to Enjay, 15 West 51st Street, New York 19, New York.

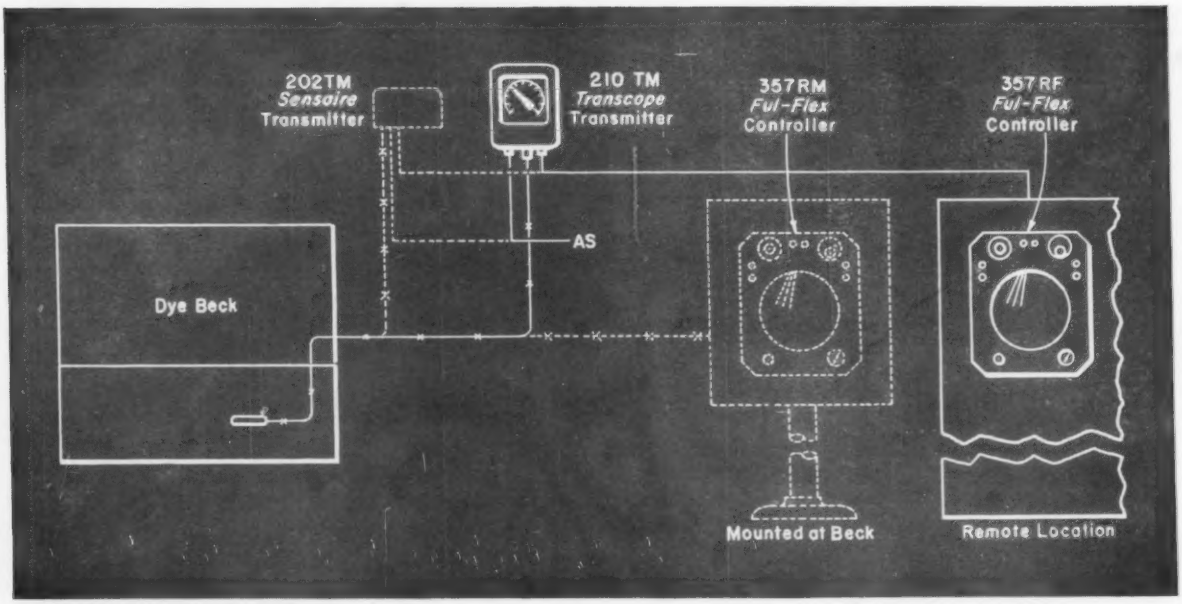
EXCITING NEW PRODUCTS THROUGH PETRO-CHEMISTRY

ENJAY CHEMICAL COMPANY

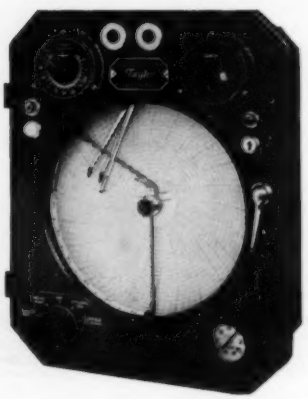
A DIVISION OF HUMBLE OIL & REFINING COMPANY

ENJAY® BUTYL

3 WAYS TO CONTROL A DYE BECK



1. **FUL-FLEX* Controller** at remote location, receiving signal from 202TM SENSAIRE* Non-indicating Temperature Transmitter.
2. **FUL-FLEX Controller** at remote location, receiving signal from 210TM TRANSCOPE* Indicating Temperature Transmitter.
3. **FUL-FLEX Controller** mounted at Dye Beck.



With the versatile Taylor FUL-FLEX Dye Cycle Controller you have the choice of centralized control — right in the boss dyer's office if you wish — or control at the dye beck. And whichever system you decide on, the FUL-FLEX controller will give you as much or as little automatic control as you require.

In addition to the features listed here, a FUL-FLEX controller gives automatic rate-of-rise protection. The rate of rise as originally set can never be exceeded, regardless of steam pressure fluctuations.

Whether you're doing piece, package, beam, top or skein dyeing, this outstandingly successful dye cycle controller will give you:

Improved quality through greater uniformity of shades.
Reduced operating costs through elimination of human error.
Increased production through quicker matching of shades, fewer add periods.

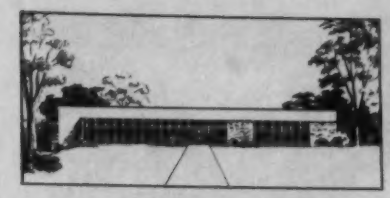
Ask your Taylor Field Engineer for a demonstration, or write for **Bulletin 98339**. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Ont.

FULFLEX FEATURES

- Adjustable starting temperature
- Adjustable initial hold time
- Adjustable rate of rise
- Adjustable hold temperature
- Adjustable hold control times
- Adjustable add periods
- Adjustable forced cooling
- Adjustable end temperature
- Adjustable automatic rinse

*Trade-Mark

Taylor Instruments **MEAN ACCURACY FIRST**



NEW DISTRICT OFFICE SERVES NEW YORK AREA

The Du Pont Dyes and Chemicals Division has opened offices in Clifton, New Jersey, to serve the New York area better. Sales, laboratory and warehousing facilities have been consolidated to speed service to customers. Come visit us at our new address: Brighton Road Industrial Park, 50 Page Road, Clifton, New Jersey. Phone PRescott 3-5600.

Announcing: A Versatile Basic Yellow with Several Advantages

One of the most interesting recent additions to the Du Pont color line is "Sevron"* Yellow 2R, a basic dye which has good all-around properties on "Orlon"* type 42 acrylic fiber and also is suitable for use on "Dacron"* type 64 polyester fiber.

The new color produces a greener shade than "Sevron" Yellow 3RL, has good fastness, solubility, and hydrolytic stability over a pH range of 3.0 to 8.0. In addition, it builds up well, exhibits a rapid dyeing rate (T/2—10 min.) with subsequent good exhaust.

It can be applied over the entire shade range and is especially suited to the production of deep shades of brown, navy and black because of its good exhaustion properties.

In addition, "Sevron" Yellow 2R shows good buildup and improved acid pH stability on "Acrilan®" 16 acrylic staple and is recommended for use on "Acrilan" 1656 by standard procedures for this fiber. It also is of value on "Creslan®" acrylic staple, "Verel®" acrylic fiber, and new "Orlon" type 36 carpet yarn.

Have you a multi-fiber dyeing problem? "Sevron" Yellow 2R could be the answer. Ask your Du Pont salesman for more information.

news from Du Pont

DU PONT OFFERS MORE THAN 70 SURFACE ACTIVE AGENTS

There's a Du Pont surface active agent that can help you in problems entailing wetting, detergency, dispersing, emulsifying, foaming, penetrating, softening, leveling, lubricating, etc.

Du Pont has a background of over thirty years' experience in surface active agents and their applications. Presently we market more than seventy different products representing all ionic types: anionic, nonionic, cationic and amphoteric.

Among the *anionic* agents we offer: fatty alcohol sulfates varying in chain length from C^8-C^{16} offered as sodium salts and some amine or alkylol amine salts; fatty alcohol phosphates which offer interesting anti-static and lubricating properties; hydrocarbon sulfonates which comprise wetting and penetrating agents, conventional detergents, as well as plasticizing and softening agents; and alkyl aromatic sulfonates which are used extensively in wet processing and cleaning operations.

Several *cationic* agents provide dye leveling and lubricating properties in addition to anti-static and softening properties.

Our *nonionic* agents have outstanding detergent properties. And since they are compatible with both anionic and cationic materials, they often provide valuable stabilizers for the prevention of coagulation and flocculation.

Our *amphoteric* products are uniquely versatile in acting anionic in alkaline solution and cationic in acid solution. They have exhibited excellent retarding, leveling and penetrating action in a great number of dye applications and are widely compatible with other chemicals.

*Registered trademarks of E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Delaware

DU PONT
Reg. U.S. Pat. Off.

DYES AND CHEMICALS

Better Things for Better Living
... through Chemistry

E. I. du Pont de Nemours & Co. (Inc.)
Organic Chemicals Department
Dyes and Chemicals Division
Wilmington 98, Delaware

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Palo Alto, Calif., 701 Welch Road
Philadelphia 3, Pa., 1616 Walnut St.
Portland 9, Ore., 1238 N.W. Glisan St.
Rumford 16, R. I., 50 North Broadway

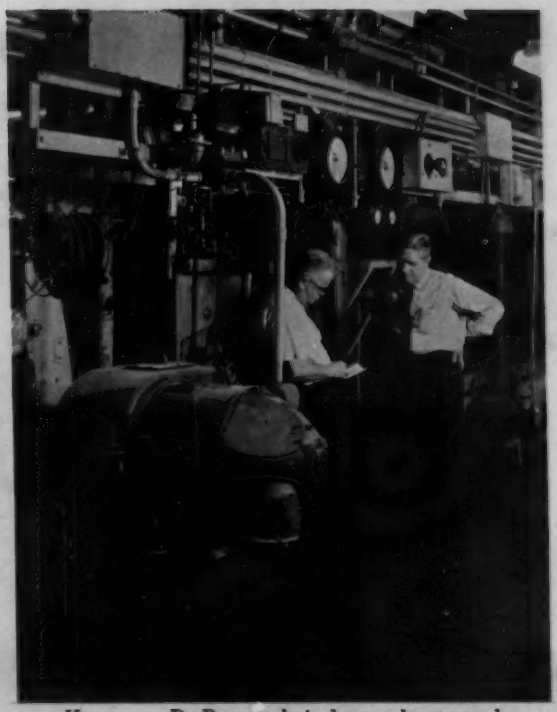
DU PONT OF CANADA LIMITED,
Montreal, Canada

DU PONT TECHNICAL CONSULTANTS COVER THE CONTINENT AS TEXTILE DYEING TROUBLE-SHOOTERS

What is a technical consultant for the Du Pont Dyes and Chemicals Division? He's an encyclopedia of practical mill experience . . . a dye catalog . . . an emergency supervisor . . . a creative thinker who can map out entire plants—a shirt-sleeve worker . . . and a short-order answering service, all rolled up in one highly mobile and affable individual.

Du Pont has a number of highly specialized men, all with strong backgrounds in continuous and batch color techniques. Piling up as many as 50,000 travel miles a year, these experts help solve all kinds of problems for textile mills. They provide an objective "outside" view and maintain the highest professional standards with regard to confidential information.

Rather than print pages of praise that these technical consultants have earned, we would prefer you discovered their caliber for yourself, if you already have not. Working from strategic locations, they're standing by—literally prepacked—to take off for your mill whenever your dyes and chemicals salesmen feel they're needed. Got a dyeing problem? Call your Du Pont salesman *now*.



Here, two Du Pont technical consultants work right in a customer mill, providing highly expert advice on specific dyeing problems.

PAUL L. SPEAKMAN
Philadelphia, Pa.

EDWARD H. GAMBLE
Rumford, R. I.

JAMES H. STRADLEY
Atlanta, Ga.

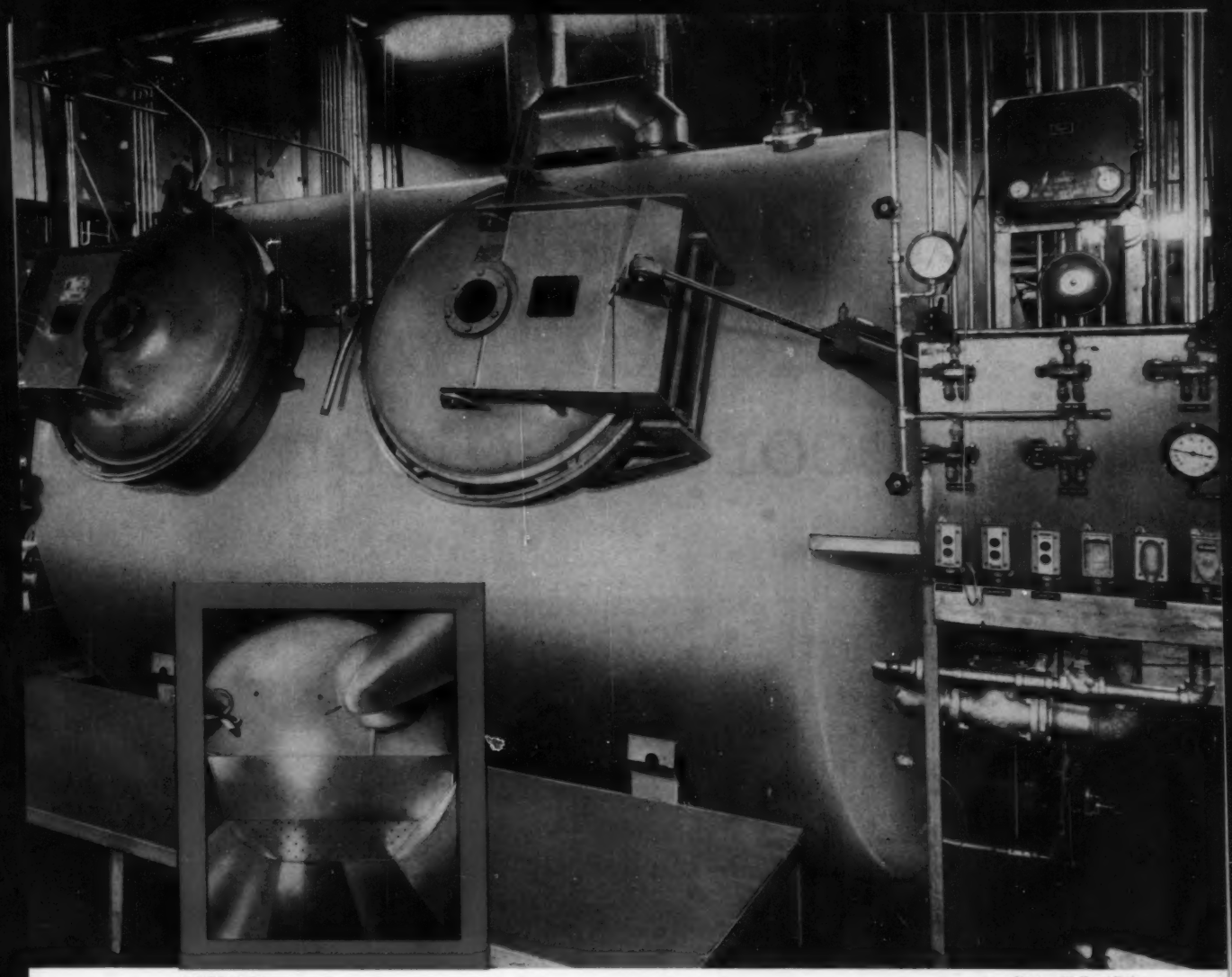
NICHOLAS R. VIEIRA
Charlotte, N. C.

news from Du Pont

NEW "PONTAMINE"® WHITE SPSW ADDED TO DU PONT BRIGHTENER LINE

With the announcement of "Pontamine" White SPSW, Du Pont now offers a wide range of fluorescent brighteners for the textile industry. "Pontamine" White SPSW is a good, economical white recommended for continuous padding operations. One outstanding feature is its compatibility with zinc nitrate—often used as a catalyst for resins.

This product is a good partner to "Pontamine" White BT—a substantive fluorescent brightener for use in batch operations. The latter product offers good buildup without yellowing and stability with peroxide bleach. When exceptional chlorine fastness is needed, Du Pont offers "Pontamine" White 2GT. Other fluorescent brighteners are available for specific application problems. Du Pont, of course, has the laboratory facilities and technical skills to back up these products and is ready to advise textile mills on their white problems.



INSIDE VIEW

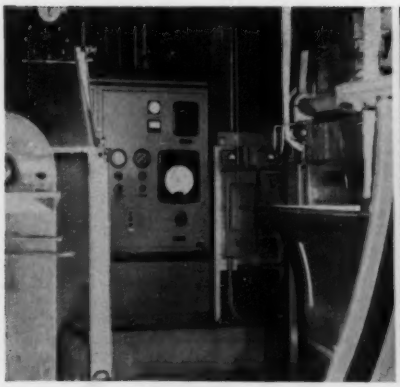
Patents Pending

BURLINGTON ENGINEERING scores again . . . with their new **"PRESSURE TWINS"** for dyeing the **FABRICS OF TODAY AND TOMORROW.** Tested on the production line for over a year, Burlington's new **HY-PRESS BECK** — for dyeing up to 250° F., and **LO-PRESS BECK** — for dyeing up to 218° F., meet the increasing need for wider range of temperature and better control of the key elements of processing new fibers in both "open width" and "rope" form. In addition to improved color fastness and clarity of shade, these new H. P. and L. P. Becks will save you money, time, chemicals and maintenance.

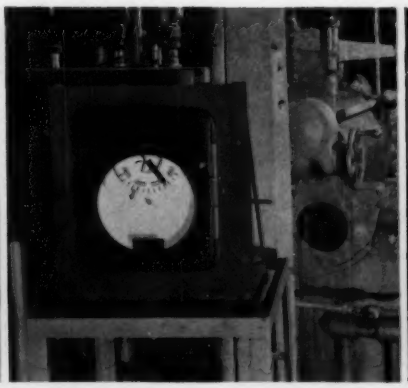
BURLINGTON ENGINEERING SALES CO., INC., GRAHAM, N. C.

(SEE US IN BOOTH 21 — AATCC CONVENTION)

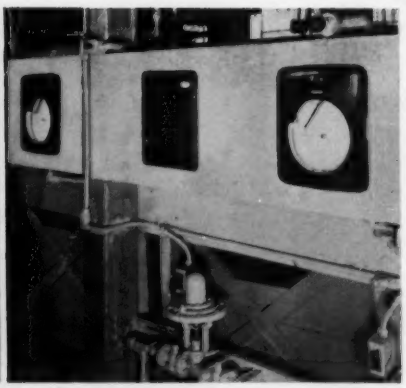
Conductivity, Redox, Foxboro Dynalog* record and control



Conductivity Control— This mill uses a Dynalog electronic Concentration Controller to hold souring bath acid strength within ±0.025% concentration of sulphuric acid. Controller has a range of 0 to 2.5 percent sulphuric acid. Operation is simple. Operator sets desired acid strength on the controller and walks away. Foxboro does the rest — automatically and continuously feeding a smooth flow of acid to the bath. Write for a copy of data sheet 220-181.



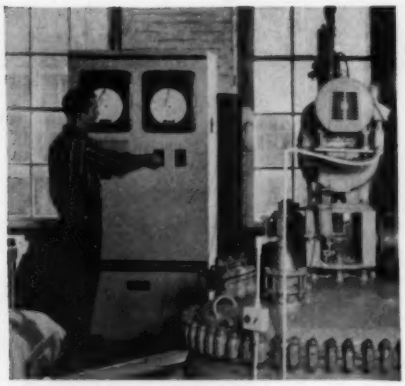
Redox Measurement—One example of the importance of Redox measurement and recording is seen on this continuous dyeing range. A Foxboro Dynalog continuously measures, indicates, and records oxidation reduction potential in Williams Unit, resulting in better shading at higher temperatures and speeds, savings in Hydro and other reducing agents, plus other important advantages. Write for copy of Bulletin 19-12.



pH Control — This large bleachery finds that relatively minor variations in pH affect the efficiency of final neutralizing of cotton cloth. pH Controller (right) continuously measures bath pH — operates valve in the incoming aqueous ammonia line to keep solution at optimum pH. Write for data sheet 220-32.

*Reg. U S. Pat. Off.

pH, Viscosity... instruments let you them all...



Viscosity Control—This finishing mill counts on a Dynalog Viscosity Recorder and Dynalog pH Recorder to insure perfect repeatability in the "batching" of urea-formaldehyde resin. Viscosity transmitter spindle, rotating in resin solution, transmits a continuous electronic signal directly proportional to the centipoise viscosity of the resin. Recorder tells when corrective action is required — prevents batch from being ruined. Write for data sheet 220-210.

continuously, automatically... and with minimum maintenance

You'll find Foxboro Dynalog Electronic instruments handling complex measurement and control tasks everywhere in the textile industry.

Dynalog instruments give higher sustained accuracy and greater freedom from maintenance than conventional potentiometers. That's because the Dynalog design has no slidewire. Instead a simple, variable radio-type capacitor, with silent magnetic drive, gives stepless continuous balancing, smooth faster response without waste motion or wear. In addition, Dynalog instruments are free of drift — require no standardization, lubrication or alignment.

Investigate sensitive Dynalog recorders and controllers. They can be used for any electrical measurement . . . resistance, voltage, capacitance. Write for Bulletin 20-10 and detailed engineering data sheets. The Foxboro Company, 299 Norfolk Street, Foxboro, Mass.

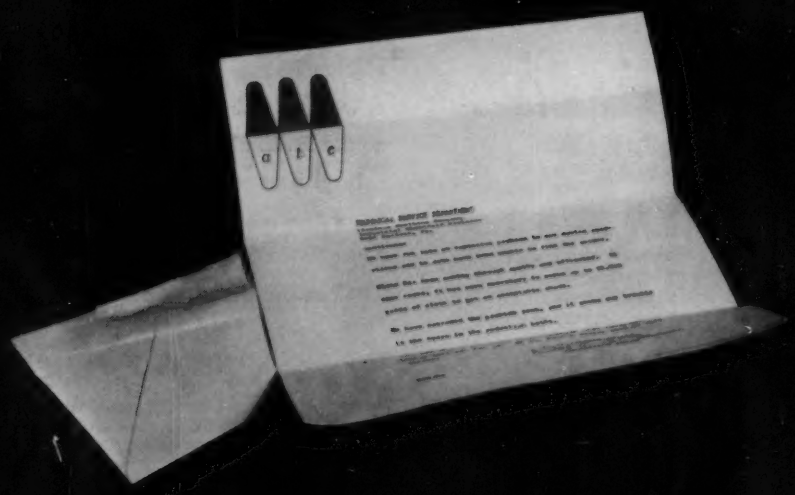
Typical Dynalog Applications in the Textile Industry

- Chemical dilution of acetic, sulphuric, and muriatic acids; caustic; hypochlorite; and others
- Dye kettles
- Continuous dyeing
- Resin batching
- Wool shrink proofing
- Desizing and bleaching
- Thread bonding
- Souring and causticizing
- Carbonizing
- Coating machines
- Condensate return
- Water and waste treatment
- Sizing Plissé machines

FOXBORO
REG. U.S. PAT. OFF.

Another example of "Virginia" nationwide technical service

"We have run into an expensive problem...
cloth has been coming through spotty...
our trouble...is in the reduction baths...
send a technical representative..."



Armed with a Redox Recorder, a "Virginia" technical representative was sent to the ailing dyehouse. The reduction bath was tested for potential every ½ hr. around the clock. Our troubleshooter found the defect to be in the method, not the material—the sodium hydrosulfite (a competitor's) was being agitated too strongly in the bath, with rapid decomposition of the hydro. New baths were prepared on the heels of the old ones. More degrading of the hydro. Final recommendation: Cut the amount of hydro used by 25% and save money. The dyehouse management was openly grateful for the know-how the "Virginia" rep had put to use. And immeasurably more so later, for it turned out that annual savings ran up into the thousands. If your company's problems involve a reducing agent, "Virginia" technical service will supply *you* with the same experienced, painstaking attention to details—and get results. For data, write to Chemical Division, VIRGINIA CHEMICALS & SMELTING COMPANY, Dept. 699, West Norfolk, Virginia.

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Field Offices: New York • Boston • Chicago • Atlanta
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A B C

Simplicity . . .

No dyestuffs are more simple in use than the Procion* range.

IN DYEING Procions can be used in a variety of hot and cold processes from simple cold batch to continuous high speed methods. No special equipment is required.

Economical Procions are fast to light, washing and perspiration. The remarkable shade range and brilliance of color are PROCION exclusives.

PROCIONS recommended for **MAXIMUM ECONOMY:**

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dyes for
increased economy:
high fastness:
widest shade range

* *Patented in the main industrial countries.*

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ORGANIC PIGMENTS

For cotton printing and dyeing

DYESTUFFS

Disperse • Alizarine • Chrome • Acid

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Trademark

For maximum results on polyester fibers, many printers find the addition of Harshaw Sharprint Carrier to their disperse printing pastes solves the difficult problem of low color yield and lack of sharpness.

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Tannic acid • Pyrogallic acid • Gallic acid • Benzoquinone

THERMOPRINT CARRIER

A recent addition to the Harshaw Carrier Family designed to aid the printer interested in running the thermosol method of color development on Polyester Fibers.

For more information about the items listed above write to:

ZINSSER DIVISION
The Harshaw Chemical Company
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ZINC FLUOBORATE 40%

Zinc Fluoborate finds use as a curing agent for "wash and wear" finishes on textiles. Advantages claimed for Zinc Fluoborate as a curing agent include: (1) short curing time—one to two minutes at the curing temperatures required; (2) high crease resistance; and (3) low chlorine retention. Users also report that there is less tendency for polymerization to occur in the bath when Zinc Fluoborate is used.

ZINC NITRATE FLAKE

Harshaw Zinc Nitrate Flake is especially suited for polymerizing resins currently being used for wrinkle-free and wash-and-wear fabrics.

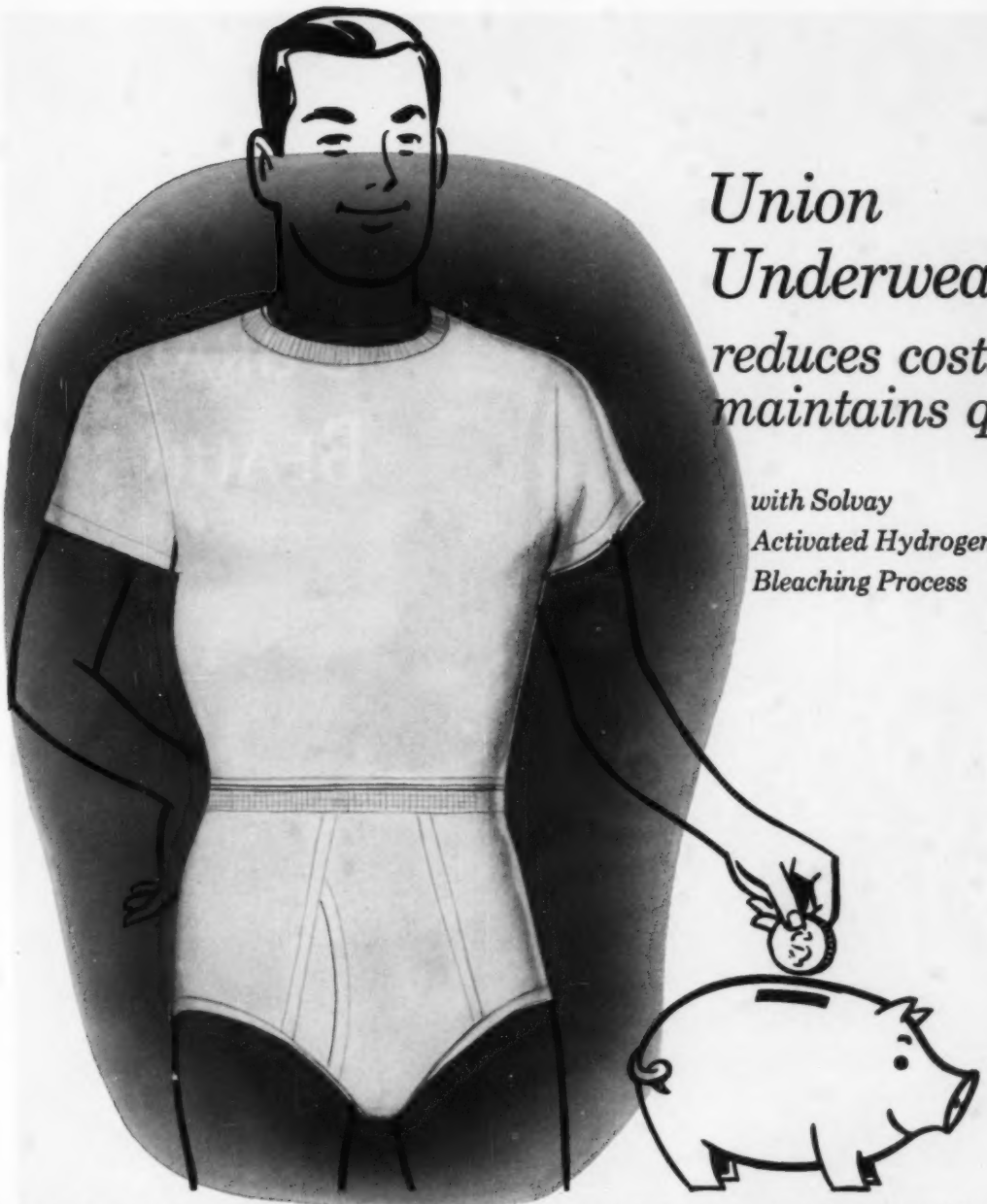
TYPICAL AVERAGE ANALYSIS

Zn	25.20%
FE	0.001%
Pb	0.005%
H_2O Insoluble	.008%
pH of 5% solution	5.1%

For more information about the items listed above write to:

THE HARSHAW CHEMICAL COMPANY
1945 East 97th Street
Cleveland 6, Ohio

HARSHAW



Union Underwear

reduces costs... maintains quality

with Solvay
Activated Hydrogen Peroxide
Bleaching Process

Over the past nine years Union Underwear Co., Inc.—licensed manufacturers of "Fruit-of-the-Loom" brand underwear—has maintained their quality standard without increasing prices. An important factor in this improved manufacturing efficiency was their adoption of the *Solvay Activated Hydrogen Peroxide Bleaching Process.*

The Solvay Activated Hydrogen Peroxide Bleaching Process is a new method for bleaching cotton developed by Allied Chemical Corporation and available under a royalty-free license. This new process can give you whites equal to your present process with an important decrease in costs . . . consumption of hydrogen peroxide and additives can be reduced 25 to 50% depending on purity of cotton before bleaching. Or, you can achieve whiter whites at no increase in cost.

Solvay can provide technical service to help you evaluate this new process for your plant. A booklet is available from Solvay which describes application, advantages, cost analysis and comparative quality . . . full details on the techniques and results you can expect. Write today for your free copy of "Solvay Activated Hydrogen Peroxide Bleaching Process for Cotton."

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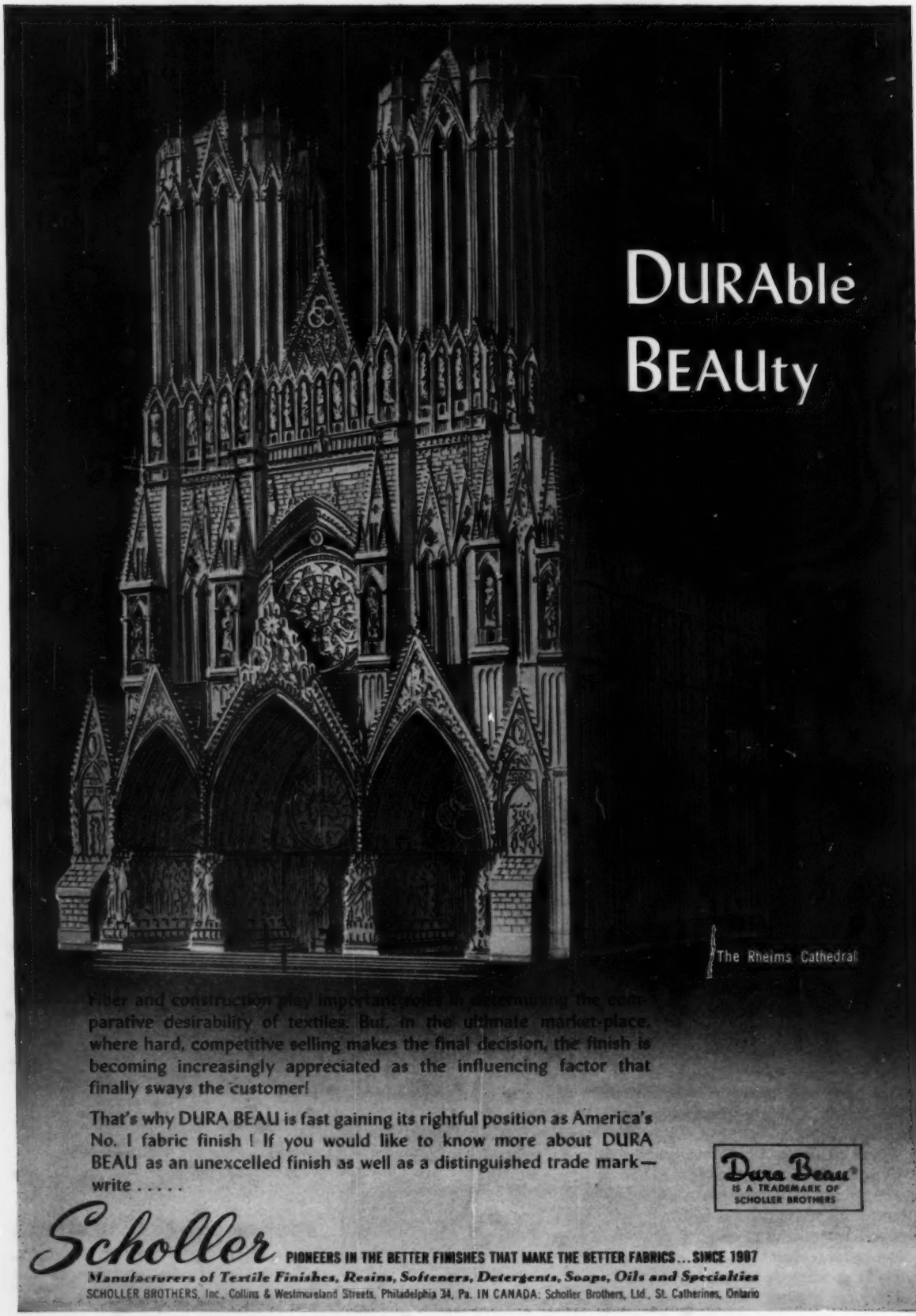

The Rheims Cathedral

Fiber and construction play important roles in determining the comparative desirability of textiles. But, in the ultimate market-place, where hard, competitive selling makes the final decision, the finish is becoming increasingly appreciated as the influencing factor that finally sways the customer!

That's why DURA BEAU is fast gaining its rightful position as America's No. 1 fabric finish ! If you would like to know more about DURA BEAU as an unexcelled finish as well as a distinguished trade mark—write . . . . .

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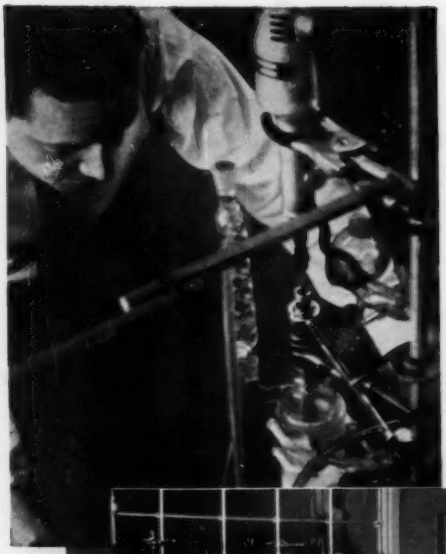

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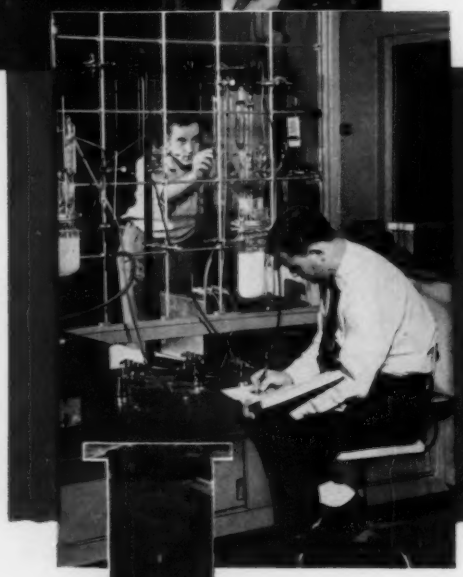

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BETTER TEXTILE PRODUCTS—you can make them today, at lower cost with MARMIX Latices. They give products excellent tuft and pile lock, firmer body and hand—provide improved age-resistance, insure greater stiffness control, less stretch and curl—and you have a dependable source of supply. You must try it to know it. Samples and technical assistance are yours for the asking. Write Dept. B-9.

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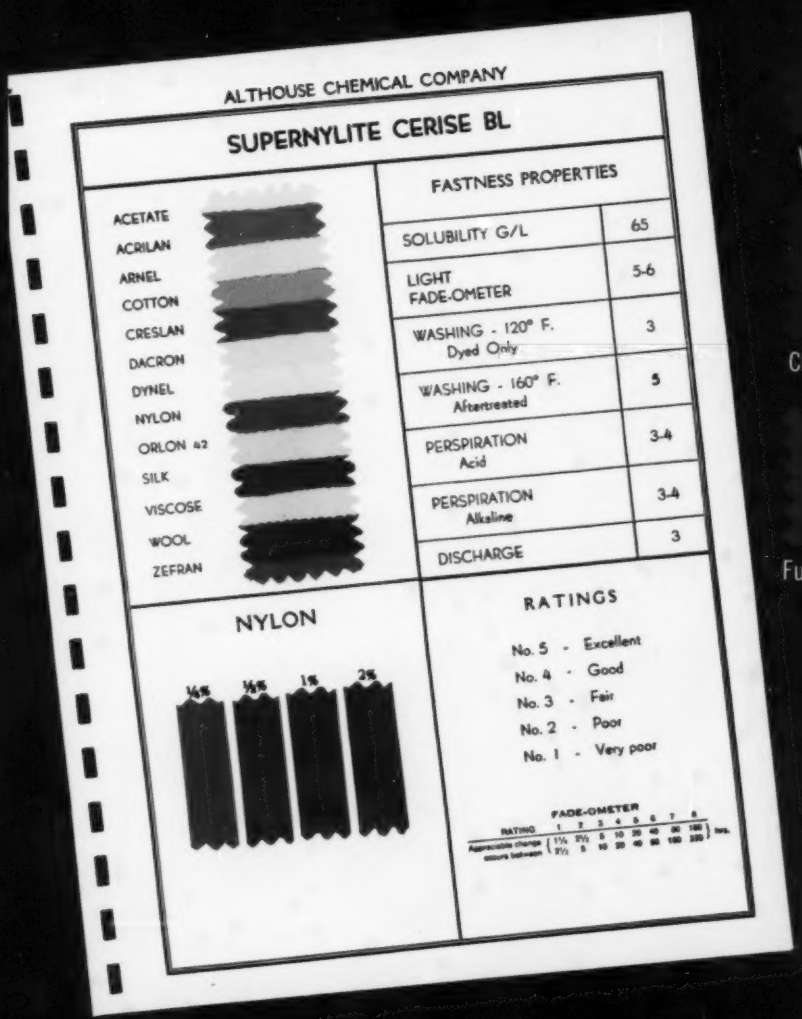
SUPERNYLITE

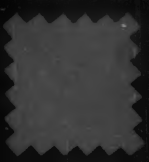
for brilliant new women's wear shades in demand for the coming season

A brand new development of Althouse Research, this is an acid dyeing color for nylon and wool. It has exceptional brilliance and is the ideal base color for coming fashion shades.



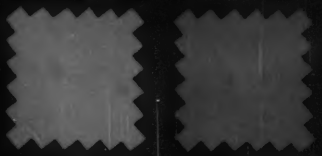
Violet Glace Crushed Raspberry Deep Claret

Crimson Hue Ruby Glow Fuchsia Spark



Fuchsia Bright Merry Cherry Ruby Jewel

Magenta Glace Venetian Plum



Sweetpea Rose Marie

Althouse multicheck quality cuts your dyeing costs by eliminating rework time and poor coverage. Get the facts on new Supernylite Cerise BL by calling Althouse Customer Service today.

Chemical Company
Reading, Penna.
a division of Crompton and Knowles Corporation
specialists in colorfast dyes

Now you can laminate foams without flames ...cut costs too

Any producer now using open-flame methods of laminating foam to fabric can cut costs with new Hycar 2671 reactive acrylic latex. This new latex makes possible adhesives without the problems of stiffness or discoloration that adhesives used to have. It eliminates the difficulties of the open-flame procedure—reduces handling problems and speeds up production.

The resulting bond is outstanding. Washability and resistance to solvents is excellent. Hycar 2671 is easy to use—much simpler than other binders. It is self-curing and stable. One of the largest licensers of foam materials has approved its use as an alternate to flame methods.

Hycar 2671 is also producing unusually effective back coatings for knit goods, upholstery and drapery fabrics. It's another sample of service you can get to produce better textiles for wider appeal. For more information, write Department PG-10 B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

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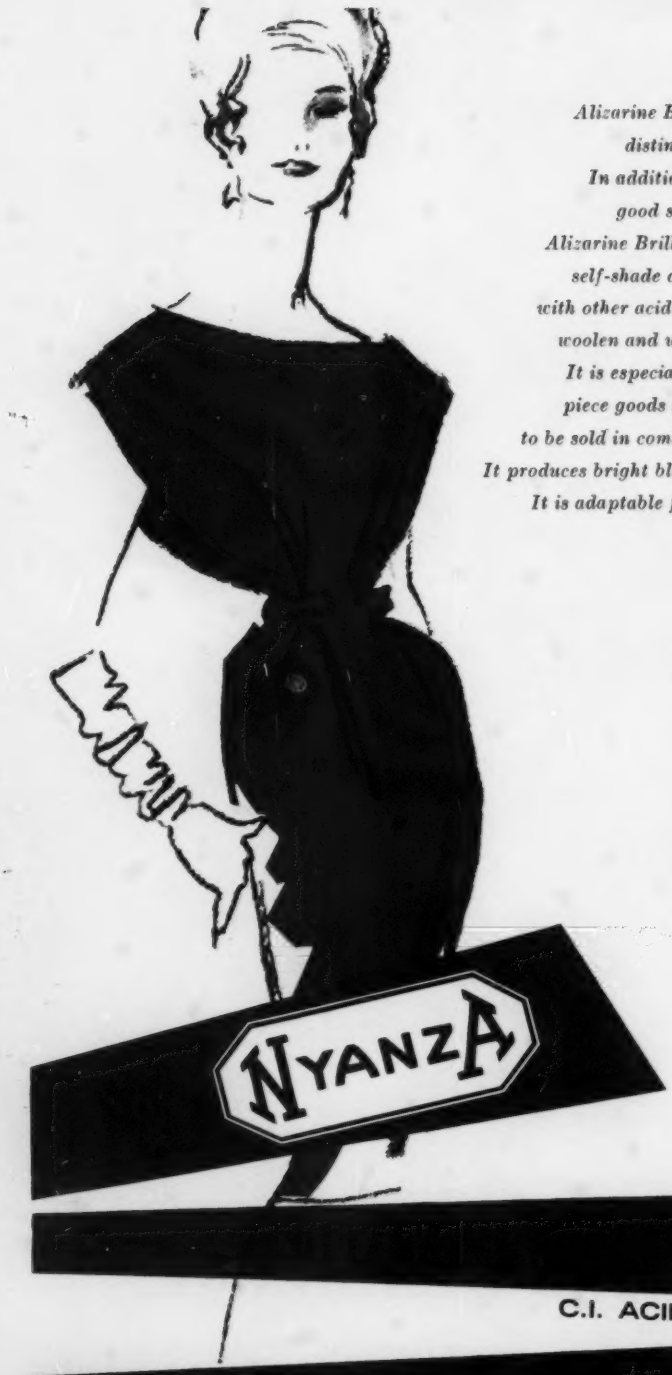

Alizarine Brilliant Blue R Conc is an acid dyestuff distinguished by its extreme brightness. In addition to its brightness this color possesses good solubility and good fastness to light. Alizarine Brilliant Blue R Conc is well suited for use as a self-shade or for bright mode shades in combination with other acid colors. It is suitable for dyeing all classes of woolen and worsted fabrics, carpet yarns, felt hats, etc. It is especially well adapted for dyeing bright woolen piece goods shades which will be used in making skirts to be sold in combination with cashmere or wool-blend sweaters. It produces bright blue shades on Nylon of good light and washfastness. It is adaptable for direct print styles on wool, silk and Nylon.

PROPERTIES

LIGHT FASTNESS:	
Pastel Shades	4
Medium Shades	4-5
Heavy Shades	5
WATER SPOTTING	5
SEA WATER	4-5
PERSPIRATION:	
Acid	4
Alkaline	3-4
CARBONIZING	4
DECATIZING	5
BLEACHING	3
HOT PRESSING:	
Dry	3
Wet	5
CROCKING:	
Dry	5
Wet	5
DISCHARGEABILITY	2

C.I. ACID BLUE 67

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PIGMENT BINDER • ANTI-CROCK FINISH

NONWOVEN BINDER

NEW CROSS LINKING VINYL RESIN

X-LINK is news in textiles! It is a cross-linking, self-reactive vinyl resin that makes the addition of thermo-setting resins optional. A longer lasting bond to fabrics and fibers results.

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FOR NONWOVENS. X-Link increases flexibility as well as tear and tensile strengths. Gives a pleasing hand and drape.

FOR PIGMENT PRINTING. X-Link improves resistance to crocking, wash fastness and dry cleanability.

X-LINK promises important quality extras for your fabrics. Why not learn more about it? Write or call your nearest National office.

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Morningstar-Paisley's
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MORNING STAR Paisley

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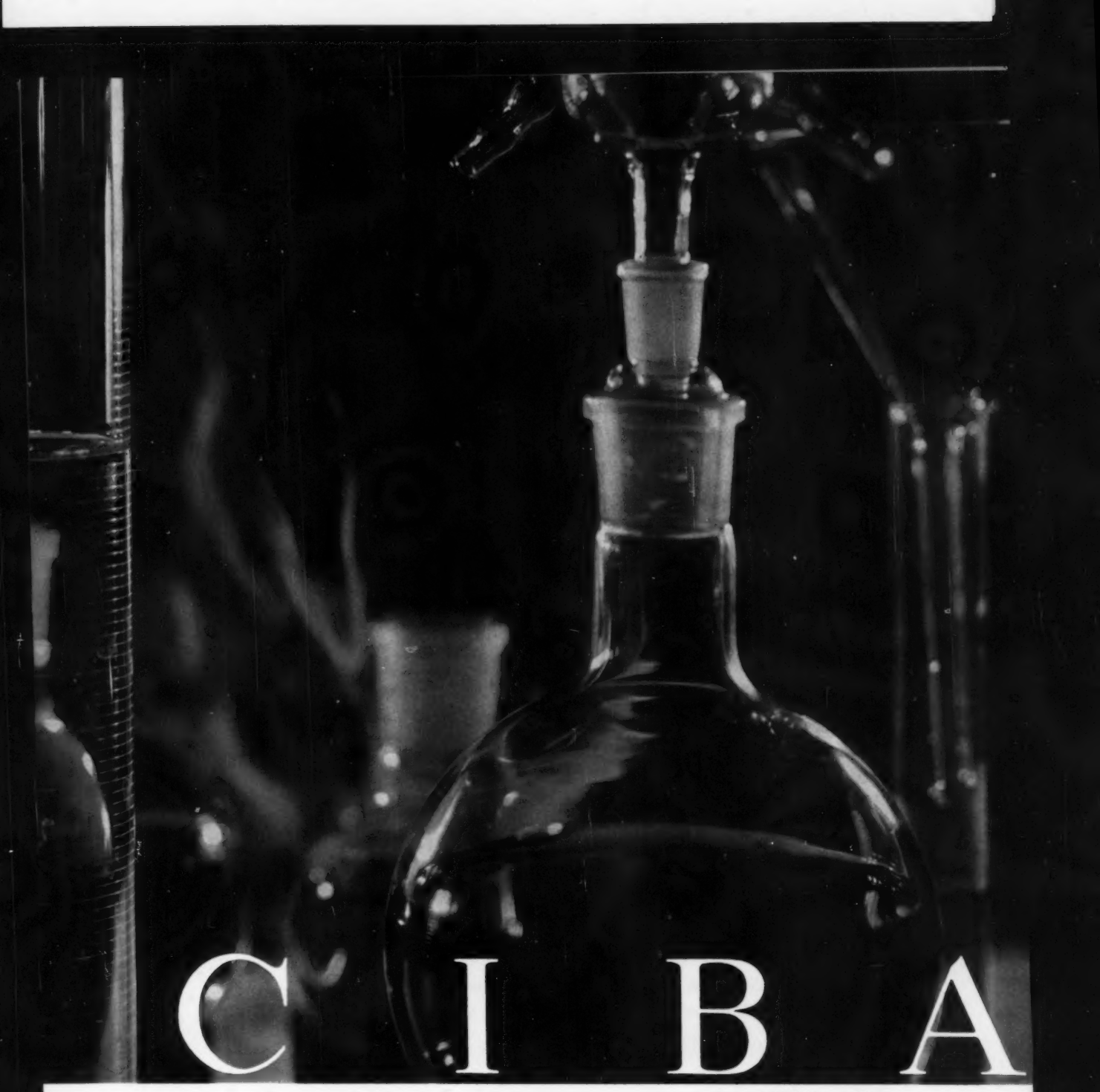


WHERE RESEARCH IS THE TRADITION

The green in this flask may be gold tomorrow, or it may be cast away. From research to riches is an unpredictable course with the only certainty being that progress in the chemical industry depends upon and demands the daring, the initiative, imagination, and hard work that are associated with research investment.

The development of new products from research to reality, from the laboratory to the plant, and finally to the market, involves skills and cooperative endeavors that come only from long experience. A constant flow of original and valuable dyes and chemical specialties provides the special character of the CIBA concern. These are the treasures that CIBA offers to the textile industry. New and better products from research — laboratory experiments that have turned into gold.

CIBA Company, Inc., Fair Lawn, N.J.

albatex BD

for dyeing and printing with CIBACRON reactive dyes...

The non-dusting whiter reduction inhibitor

The non-dusting and whiteness feature of this improved print assist and oxidizing agent increases its workability in the plant when used to control reduction in printing and dyeing with Cibacron reactive dyes. Ground shades to be discharged with hydrosulphite pastes are completely penetrated by Albatex BD to prevent doctor streaks, and to avoid tarnishing or scumming effects.

Used with vat colors, Albatex BD prevents bleeding from dyed yarns during alkaline boiling and is an efficient protection during kier boiling when used as an addition to viscose spinning solutions.

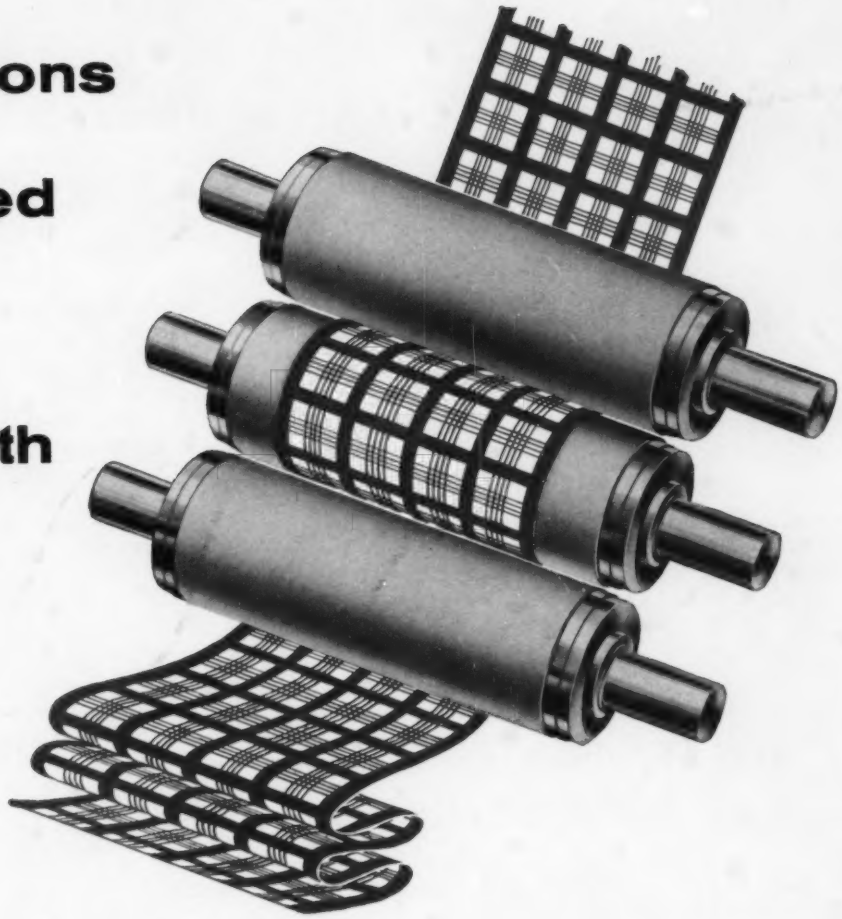
Readily soluble, solutions are anionic, of neutral reaction, and stable to acids and alkalis.

Complete technical information for your specific use available upon request at CIBA Company Inc., Chemical Specialties Division, Fair Lawn, New Jersey.

C I B A

WHERE RESEARCH IS THE TRADITION

More Cottons are finished on Butterworth Pressed Rolls than any other make



It's the extra hours of service built into every Butterworth Pressed Roll that makes Butterworth the one best source for all your pressed roll needs.

Butterworth Rolls are built to last . . . using the finest materials . . . with the right degree of hardness and smoothness for the finish you require.

You'll get dependable service, and dependable deliveries at Butterworth, roll-makers for the Textile Industry for 76 years. Let us quote on your requirements.

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A new product of Argus Research: Argus DWR

BREAKTHROUGH
IN WATER REPELLENTS

Unique Argus DWR* withstands both dry cleaning and laundering!

This new product of Argus research is a complete departure in durable water repellents. Argus developed it specifically for cotton, rayon, nylon, Dacron, Orlon, other man-made fibers, and blends. It has outstanding advantages for the textile industry.

ARGUS DWR is not affected by repeated dry cleanings and launderings. It equals or betters silicone water repellents in resistance to *dry cleaning*, and equals or betters pyridine quaternary and stearamide resins in *washfastness*.

A new, non-ionic reactive emulsion polymer, ARGUS DWR is compatible with all normal finishing chemicals including urea-formaldehyde, melamine, ethylene urea, triazone, triazine, acetal, and epoxy resin finishes. So used, it enhances wash-and-wear properties and resistance to creasing, wear, and tear. It is also highly recommended for use with various fluorocarbon oil repellent resins to provide oil and water repellency for military fabrics, upholstery, outerwear, and other apparel. In addition, it is useful for non-woven fabrics, paper products, wood and leather.

ARGUS DWR is easily cured on fibrous materials through a wide variety of catalysts, including the preferred catalyst, zirconium oxychloride. Moreover, it produces no pyridine, amine, or other objectionable odors, thus eliminating the need to wash fabrics after they are treated. Other advantages: completely miscible with water at room temperature; excellent running properties; good storage stability.

**Patents applied for*

Extensive laboratory data are available. And Argus' research staff will gladly work with you in developing specific applications on your fabrics. Write or call:

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Softness sold this towel...

and CARBIDE's amines gave it that softness

Textile softeners, based on CARBIDE's amines, give linens and cottons the softness that makes them sell. And, with the complete selection of amines available from Union Carbide, you can make textile softeners that give the right kind of softness for best sales appeal in finished goods. Cationic mill-softeners, prepared by fatty acid esterification or amidification of CARBIDE'S amines, offer a full range of softening effects.

Here are seven amines for your evaluation:

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- Diethanolamine
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- Diethylene Triamine
- Dimethylamino Propylamine
- Diethylamino Propylamine

Remember, whether you need amines . . . UCON textile lubricants . . . anti-foaming agents for scouring and mercerizing . . . water-insoluble solvents to achieve deeper and fuller shades in dyeing . . . monomers for fiber syntheses . . . ethanolamines and TERGITOL nonionic surfactants for detergents . . . or other organic chemicals for finishing agents and lubricants . . . you'll find them at CARBIDE. With more than one hundred CARBIDE textile chemicals to choose from, you can take advantage of the increased savings of bulk buying in mixed tank car and mixed tank truck lots, or mixed carload lots in drums.

For information and help from experienced Technical Representatives, call your nearest CARBIDE sales office or write to: Union Carbide Chemicals Company, Division of Union Carbide Corporation, Dept. J, 270 Park Avenue, New York 17, N. Y.

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UNION CARBIDE CHEMICALS COMPANY

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VAT DYES!

GIVE TRUE-COLOR PERFORMANCE WITH LASTING FABRIC APPEAL

FROM RESEARCH TO REALITY

GENERAL DYESTUFF COMPANY

A DIVISION OF

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MEMBER VAT DYE INSTITUTE • INDANTHRENE VAT DYES MANUFACTURED BY THE GENERAL ANILINE & FILM CORP. ARE SOLD OUTSIDE THE UNITED STATES AND CANADA UNDER THE TRADE NAME "FERANTHREN" BY DISTRIBUTORS ALL OVER THE WORLD.

One of a series

COOKIES CO_2 & CORDUROY

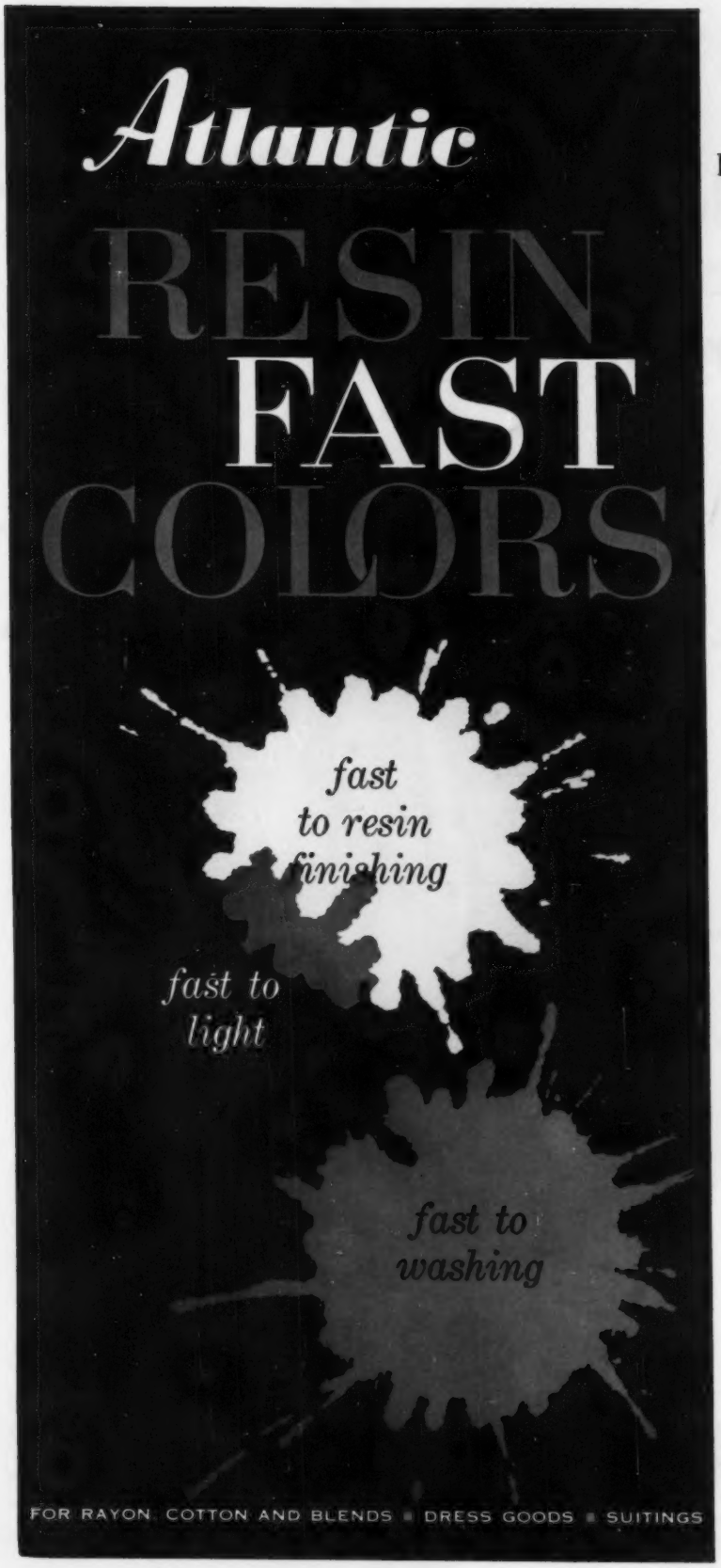
were the ingredients of this unlikely mystery. Stains on the pastel shades started it. The finisher blamed the dyer, the dyer blamed the bleacher, the bleacher said oil on the knives did it, and the boss weaver put the finger on the chemist. He couldn't find a patsy—until he found that the spotted goods had all gone through the number three treadle-brush. When the machine checked out clean, he set one of his men to play Pinkerton on the operator.

That's when the real story came out: the oldtimer on the brush didn't have a tooth in his head—but he loved cookies with his lunch. Being without dentures, he had to take a swig of "tonic" to soften every mouthful. Unfortunately, the soda pop was sometimes warm and the CO_2 pressure was just too much for him—so the pinwale going through the machine at noon got a spray of cookies-in-coke. (The problem was solved once for all by the personnel man and a local dentist.)

All this, of course, leads up to the commercial: did you know that the name Wallerstein means as much to bakers and bottlers as to textile people? Wallerstein enzymes and dough conditioners help put the "good" into baked goods today—and Wallerstein antioxidants help preserve the fresh fizzy flavor of packaged soft drinks. Think about that at lunch time. Think about this too: constant searching for better food additives fills our shelves with many experimental, development and commercial enzymes. Many types. Many grades (from AR on down). It's possible that one of these enzymes can solve a sticky problem in textile research or production. Maybe even the one you are working on right now. You ought to write us if you think we can help. (And remember, please, we make Rapidase® and Serizyme® too.)

WALLERSTEIN COMPANY
Division of Baxter Laboratories, Inc.
Staten Island 3, N. Y.

Need a High Potency Cellulase? Write Dept. A-5.



A Complete Range of **Atlantic**

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Resin Fast Yellow LLG
Resin Fast Yellow LL2R
Resin Fast Yellow LRTF Ex. Conc.
Resin Fast Yellow RLC
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Resin Fast Orange 3GU
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Resin Fast Red BB
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Resin Fast Red 6BLL

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Resin Fast Blue BFL
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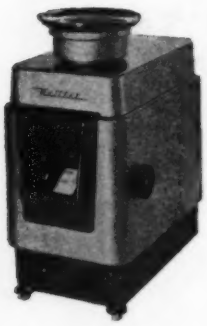

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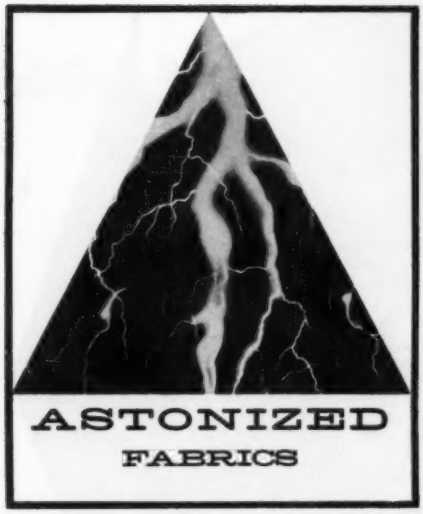

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NEW METHODS FOR THE PREPARATION OF ALKALI-SOLUBLE TEXTILE MATERIALS[1]

ROBERT M REINHARDT, TERRENCE W FENNER, and J DAVID REID

Southern Regional Research Laboratory[2]

New Orleans, Louisiana

New methods for the preparation of alkali-soluble textiles have been developed at the Southern Regional Research Laboratory using cotton as a starting material. Etherification of cotton to a low degree of substitution followed by treatment of the partially etherified cotton with many cellulose oxidizing and/or hydrolyzing agents yields modified cottons which are soluble in aqueous alkali. The value of the partial etherification step in the preparation is emphasized in the comparatively mild conditions which are operative in the oxidation-hydrolysis step. These conditions permit the production of fibrous materials with better strength-solubility characteristics and are more economical than the more rigorous conditions necessary in the treatment of native cotton.

Only a small amount of alkali-soluble textile material is used presently by industry although many potential uses have been proposed. The availability of more satisfactory soluble products and methods for their production may encourage greater utilization of these unique cellulose derivatives.

Partially etherified cottons which have been used in this study include aminoethylated, carbomoylethylated, carboxyethylated, carboxymethylated, cyanoethylated, hydroxyethylated, methylated, alpha-methylcarboxymethylated, and phosphonomethylated cotton. For the oxidation-hydrolysis step, chromic acid, chromic acid-oxalic acid mixture, periodic acid, nitrogen dioxide, sodium nitrite-mineral acid mixture, nitric acid, sulfuric acid, hydrochloric acid, sodium hypochlorite, and potassium permanganate treatments have been investigated. A number of these combinations result in fibers which have promising commercial potential—solubility, strength, and simplicity and economy of production.

INTRODUCTION

RESEARCH at this Laboratory has resulted in a number of new methods for the preparation of alkali-soluble textiles. These methods all use cotton as a starting material. It is hoped that one or more of these new preparative techniques may provide the soluble fiber which is needed in various segments of the industry. In general, it has been found that etherification of cotton to a low degree of substitution (DS) followed by a comparatively mild treatment with cellulose oxidizing and/or hydrolyzing reagents yields fibrous products which are alkali-soluble but which retain a substantial proportion of the original textile properties of the cotton fiber.

There has been a continuing interest in soluble textile materials for many years (*1*). Numerous industrial processes have been proposed which require a readily soluble textile member and a number of these processes are currently in use. However, there are those in industry who feel that the soluble textile materials now available do not adequately meet the rigorous requirements for many processes. A soluble textile with greater appeal in cost, availability, and performance is still being sought.

Many varied types of soluble fibers have been investigated and used by industry. These fibers generally fall into four principal classes: water-soluble, acid-soluble, alkali-soluble, and organic solvent-soluble. Of these, organic solvent-soluble and alkali-soluble products have been most successfully used. For example, acetone-soluble cellulose acetate and alkali-soluble cellulose derivatives are both used in lace manufacture (*2, 3*). Few acid-soluble fibrous materials have been successfully prepared. Water-soluble fibers also are difficult to produce and to handle because of their susceptibility to damage by ever-present moisture.

Although a number of organic solvent-soluble fibers are known, there is a general tendency in the textile industry to avoid processes which involve the use of organic solvents. These solvents are often toxic, flammable materials which increase production costs because of attendent higher insurance rates, the economic necessity of recovering the solvent, and the initial cost of the solvent itself.

In general, alkali-soluble textile materials appear to be the easiest to use. The alkalis needed for their dissolution are readily available, cheap, and unlike acids or organic solvents usually require little or no special equipment.

Among alkali-soluble textile materials which have been used are oxidized celluloses, silk, wool, and alginate fibers. A fabric prepared from waste wool was

[1]Presented at the 1960 Southeastern Regional Meeting of the American Chemical Society, Birmingham, Ala, Nov 3-5, 1960.
[2]One of the laboratories of the Southern Utilization Research and Development Division, Agricultural Research Service, U S Department of Agriculture.

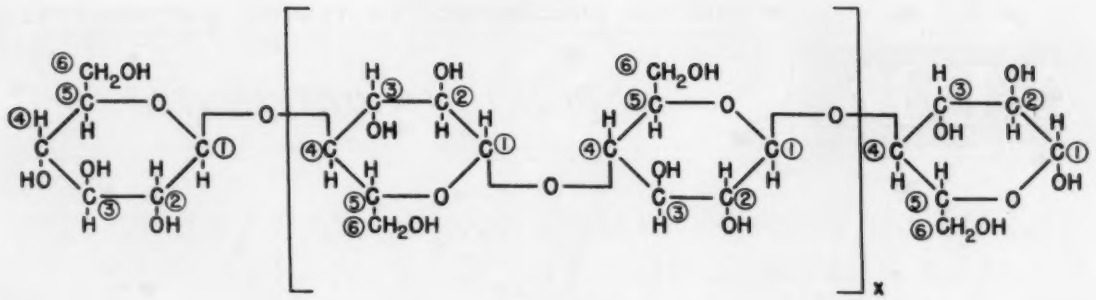

Figure 1
Cellulose molecule

once supplied from Germany, but it is no longer produced because of the rising cost of this fiber. The cost and availability of the grade of silk used in alkali-soluble fabric and yarn, supplied principally from Japan, has been subject to wide fluctuation. An alkali-soluble modified cotton fabric produced in this country has competed with these noncellulosic fibers for many years. An oxycellulose gauze which is slowly soluble in the alkaline body fluids is produced for medical uses.

The present paper describes the preparation and properties of a number of new cellulosic fibers which could complement and supplement currently available alkali-soluble textile products.

THEORETICAL MECHANISMS —— Chemical modification of cotton by many oxidation and etherification reactions long has been known to yield alkali-soluble products, if carried out to sufficient degree (*1*). Often, however, the degree of chemical modification necessary for good alkali solubility was uneconomical or impractical for industrial utilization. Strength losses are sometimes so great that all the useful mechanical properties and even the fibrous form of the starting material disappears.

This study has shown that a combination or two-stage modification will overcome most of these difficulties and yield alkali-soluble products with good strength characteristics. Many combinations of etherification and oxidation-hydrolysis treatment have been found to produce potentially valuable new soluble textile materials.

Etherification of cotton to a low DS is readily accomplished. Techniques are well established and extensively reported in the literature (*4*). The chemistry of celluose oxidation and hydrolysis also has been widely studied and reported (*5*).

The classical chemistry of cellulose modification has been found to be operative in the reactions of partially etherified cottons. The only important exception is that the rate and extent of subsequent treatments are sometimes much greater with etherified cottons than with unmodified cotton. The authors previously have demonstrated this in their study of partially carboxymethylated cotton as an intermediate for further chemical modification (*6*). Russian researchers similarly have shown that slightly hydroxyethylated cellulose is more reactive than alkali-pretreated or unmodified cellulose in subsequent alkylation treatments (*7*).

Because of this greater reactivity, partially etherified cottons can be treated with oxidation-hydrolysis agents under much milder conditions of reaction. The practical result of this is that alkali-soluble cottons can be produced with greater retention of the useful textile properties of the cotton fiber.

The increased rate and extent of reaction of partially etherified cottons is probably due to the greater accessibility of these modified cottons. The ether substituents hold the cellulosic chains apart and overcome some of the strong hydrogen bonding effects usually encountered in trying to bring about a reaction with the cellulosic hydroxyl groups. Many of the ether substituents used in this work are hydrophilic and cause pronounced swelling of the fibers under aqueous reaction conditions.

In dissolution, the ether substituents act as solubilizing sites. Although slightly different effects are obtained with the various oxidation-hydrolysis agents, the mechanism of solution appears to be quite similar. These agents cause some chain hydrolysis during treatment resulting in lower dp (degree of polymerization) and introduce carboxyl and carbonyl groups which cause further chain cleavage and solubilization when attacked by alkali. The fragmented chains bearing the ether substituents are rendered more soluble because of these groups. From the data presented herein, the complementary effect of the etherification and oxidation-hydrolysis treatment will be demonstrated.

CHEMISTRY———The cotton fiber is composed of cellulose chains which are represented as polymers in which the repeating unit is the anhydroglucose group (Figure 1). The hydroxyl group at the 2, 3, or 6 position may be substituted with an ether radical. Croon recently has surveyed the distribution of substituents in a number of cellulose ethers (*8*). The position substituted depends upon the attacking reagent and the conditions of reaction. In partially etherified cottons, the number of anhydroglucose units substituted is small, leaving most of the cellulosic hydroxyl groups free for further reaction.

Oxidation at the 2, 3, or 6 position may produce a carbonyl (aldehyde or ketone) or carboxyl group. Oxidation at the aldehydic group on carbon atom 1 of a terminal anhydroglucose unit is possible, but in cotton and in partially etherified cottons, the dp is relatively high and thus the number of terminal groups available for such oxidation is small.

Some reagents are more specific than others in the point of attack and the group introduced by oxidation. For example, periodic acid reacts preferentially with the 2,3-dihydroxy group which is oxidized with ring cleavage to form a dialdehyde group. Although this is the principal reaction of periodic acid and cellulose, other oxidation reactions have been shown to occur. Likewise, nitrogen dioxide, which reacts principally at the 6 position to produce a carboxyl group, also affects other reactions at this position and at the 2 and 3 positions. Most of the other oxidizing agents are much less specific in their reaction with cellulose and attack all

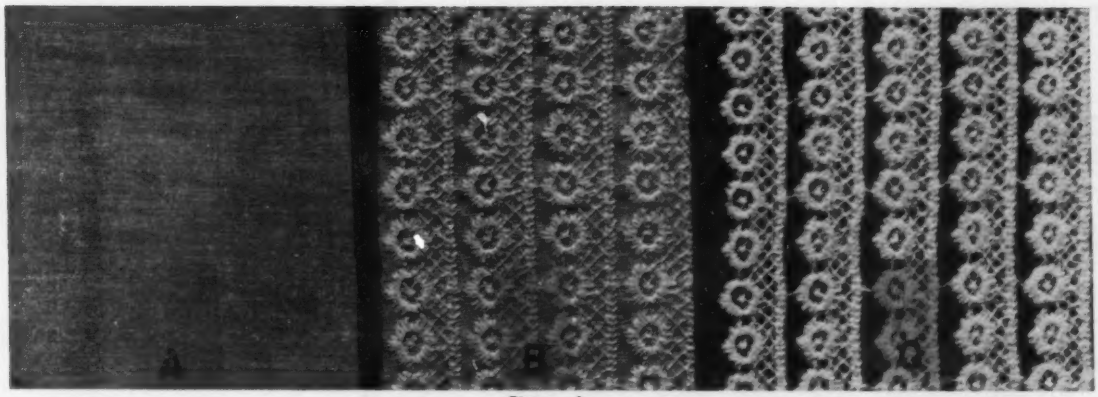

Figure 2

Steps in the production of lace by the Schiffli process using alkali-soluble backing fabric. A is Solvotex backing fabric, B is the fabric with the lace embroidered upon it, C is the finished lace after dissolution of the backing fabric with sodium hydroxide solution. Samples courtesy Londat Aetx Fabric Co, Elizabeth, NJ.

TABLE I

Partially etherified cottons used in this study

Partially etherified cotton	*Ether substituent, R [Cell-O-R]*	*Reagents used for preparation*	*Reference*
Aminoethylated cotton	$-CH_2CH_2NH_2$	2-Aminoethyl sulfuric acid and strong NaOH solution	(*9*)
Carbamoylethylated cotton	$-CH_2CH_2CONH_2$	Acrylamide and dilute NaOH solution	(*10*)
Carboxyethylated cotton	$-CH_2CH_2COOH$	Acrylonitrile and strong NaOH solution; or alkaline hydrolysis of cyanoethylated cotton	(*11, 12*)
Carboxymethylated cotton	$-CH_2COOH$	Chloroacetic acid and strong NaOH solution	(*13*)
Cyanoethylated cotton	$-CH_2CH_2CN$	Acrylonitrile and dilute NaOH solution	(*12*)
Hydroxyethylated cotton	$-CH_2CH_2OH$	Ethylene oxide and dilute NaOH solution	(*14*)
Methylated cotton	$-CH_3$	Dimethyl sulfate and strong NaOH solution	(*15*)
Alpha-Methylcarboxymethylated cotton	$-CH(CH_3)COOH$	Alpha-chloropropionic acid and strong NaOH solution	—
Phosphonomethylated cotton	$-CH_2P(O)(OH)_2$	Disodium chloromethylphosphonate and strong NaOH solution	(*16*)

three hydroxyl groups in a random manner.

Hydrolytic cleavage of the 1,4-glucosidic linkage between anhydroglucose units also results from treatment with many of the oxidizing agents which are acidic or are employed in acidic media. Mineral acids are strong hydrolyzing agents for cellulose and its derivatives and effect drastic cleavage of the glucosidic linkages. Such hydrolysis results in a lowering of dp and thus a greater tendency towards alkali-solubility.

EXPERIMENTAL AND DISCUSSION

Many oxidation-hydrolysis treatments of partially etherified cottons have been investigated. Some ethers and some treatments have been more thoroughly studied than others. This section reports the most successful preparations although as much information on other potentially valuable products and variables of the processes as may be conveniently handled in this presentation is included. However, those interested in this field may find other products and processes which bear further investigation.

Partially etherified cottons used in the study and the method of preparation are listed in Table I. The references cited give details of the preparations and the methods of analysis which may be used for determination of their degree of substitution. In addition, a well-mercerized cotton also was treated with the agent under investigation in each experiment to provide a control. The effect of the substituent on the etherified cotton was then more readily shown by comparison with the control.

Breaking-strength determinations were run by the ASTM method (*17*) and the results expressed as the percentage of the original strength of the fabric used.

Alkali solubilities were quantitatively determined. An accurately weighed portion of the sample was treated with a 100:1 liquor-to-fabric ratio of alkali solution and the undissolved residue separated by centrifugation, washed, dried, weighed, and the solubility calculated. Solubilities were determined in 10% sodium hydroxide solution at the boil for 10 minutes, and in 1% sodium carbonate or the indicated concentration of sodium hydroxide solution at room temperature (26°C) for 30 minutes with agitation.

CHROMIC ACID TREATMENT———Alkali-soluble fabric prepared by the treatment of partially carboxymethylated (*18*) and partially cyanoethylated cotton (*19*) with chromic acid has been patented by Weisberg. These fabrics are sold under the trade name Solvotex[2] and have been in production for a number of years. They are used in the manufacture of lace by the Schiffli process, the steps of which are illustrated in Figure 2. They are particularly valuable for this use because the fabric has adequate strength retention, is quickly soluble in alkali, dissolves without leaving gummy, hard-to-remove residues, and can be washed with water.

The authors of the present paper have investigated the variables of the chromic acid oxidation of partially etherified cottons and have shown that partially aminoethylated and partially methylated cotton also may be utilized for the preparation of soluble fabrics (*20*). It was shown also that the partially etherified cotton must be prepared under swelling conditions to attain good alkali solubility from the oxidation step.

In a typical preparation, partially carboxymethylated cotton with a DS of 0.1 was treated with 3% aqueous chromic acid for 30 minutes at 25°C, washed with tap water, and dried. The product retained 81% of its original strength and was 97.0% soluble in boiling 10% sodium hydroxide.

[2]The mention of trade names and companies in this paper does not constitute an endorsement by the U S Department of Agriculture over others not mentioned.

TABLE II

Alkali solubility of partially etherified cottons oxidized with periodic acid[a]

Partially etherified cotton	*Alkali solubility, %[b]*
Mercerized (control)	60.2
Aminoethylated, DS 0.08	99.6
Carboxyethylated, DS 0.02	63.6
Carboxymethylated, DS 0.08	97.6
Methylated, DS 0.55	72.2
Alpha-methylcarboxymethylated, DS 0.03	72.3

[a] Samples treated with 1% periodic acid solution at 26° C for 16 hours.
[b] Solubility determined in 10% aqueous sodium hydroxide at the boil for 10 minutes.

TABLE III

Oxidation of partially carboxymethylated cotton and mercerized cotton with various concentrations of periodic acid[a]

Concentration of periodic acid, %	*Strength retained[b] %*	*% Solubility in[c]* 1% NaOH	2.5% NaOH	10% NaOH
On carboxymethylated cotton, DS 0.08:				
0.5	75.8	31.9	44.6	95.3
1	70.7	47.2	69.1	98.1
2	80.0	73.9	91.1	99.3
4	79.4	75.9	96.2	99.8
On mercerized cotton (control)				
0.5	76.1	12.2	12.7	31.7
1	66.5	18.0	18.7	48.2
2	56.3	26.8	28.7	64.0
4	58.4	36.0	38.5	80.2

[a] Samples of partially carboxymethylated cotton (DS 0.08) and of mercerized cotton treated with 0.5 to 4% periodic acid at 26° C for 16 hours.
[b] Original strength of the carboxymethylated cotton fabric was 50.5 lb and that of the mercerized fabric was 51.9 lb.
[c] Solubility determined in the indicated concentration of sodium hydroxide solution at room temperature for 30 minutes.

CHROMIC ACID-OXALIC ACID TREATMENT——It was found that the addition of a small amount of oxalic acid to the chromic acid oxidation bath accelerated the reaction rate during this step of the treatment of partially etherified cottons (*20, 21*). Using a mixed chromic acid-oxalic acid bath in the treatment of partially aminoethylated cotton and partially carboxymethylated cotton, it was possible to obtain an alkali-soluble material in greatly reduced reaction time.

In contrast with the 30-minute reaction time necessary in the example given in the previous section, treatment of partially carboxymethylated cotton (DS 0.1) with a mixutre containing 2% chromic acid and 2% oxalic acid at 25°C for one minute produced a fabric which was 95.6% soluble in boiling 10% sodium hyroxide and which retained 84.6% of its original breaking strength.

For application on a plant scale, this treatment might be effected by addition separately of chromic acid solution and of oxalic acid solution to a shallow dip pan, maintaining a minimum amount of mixed liquor in the pad pan at all times. This slow mixing would prevent loss of efficiency due to interaction of the two acids before application to the fabric since the acids are kept separate until actually used.

PERIODIC ACID TREATMENT——The periodic acid oxidation of partially carboxymethylated and of cyanoethylated cotton is covered by the Weisberg patents (*18, 19*). Because no experimental conditions are cited in the patent specifications, this technique for producing alkali-soluble textiles was investigated briefly.

In Table II are shown the solubilities in boiling 10% sodium hydroxide of five partially etherified cottons and a mercerized control which were oxidized with 1% periodic acid at 26°C for 16 hours. The relatively low solubility of the oxidized-methylated sample was surprising but may be due to substantial substitution of methyl groups in the 2 or 3 position of the anhydroglucose unit which prevents attack of the 2,3-dihydroxy group by the periodic acid. Aminoethylated and carboxymethylated cotton lend themselves to preparation of highly soluble products with this reagent.

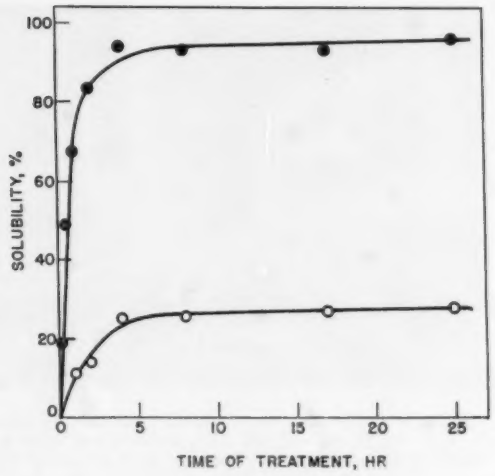

Figure 3
Solubility in 1% sodium carbonate solution of samples of carboxymethylated cotton (●) and of mercerized cotton (○), both oxidized with gaseous nitrogen dioxide at 25°C for various times

Samples of partially carboxymethylated (DS 0.08) and a control were treated with a series of concentrations of periodic acid (0.5 to 4.0%) at 26°C for 16 hours. The strength and solubility of these samples in various cold sodium hydroxide solutions are shown in Table III. The samples oxidized with the more concentrated periodic acid solutions exhibited appreciable solubilities even in the dilute concentration of alkali and had good strength retentions.

Although periodic acid presently is considered too expensive for most industrial uses, an electrolytic recovery method has been announced which may make the use of this reagent economically feasible (*22*).

NITROGEN DIOXIDE TREATMENT——Oxidation of cotton gauze with nitrogen dioxide to produce a surgical material which is soluble and can be slowly absorbed by the body has been in limited commercial production for several years (*23*).

The nitrogen dioxide oxidation of partially etherified cottons has been studied by the authors and will be reported more completely at a later date. The use of partially etherified rather than mercerized or native cotton appears to offer means of achieving good alkali solubility with shorter oxidation time (*6*). The products are readily soluble even in mildly alkaline solutions. With most of the other treatments described in this paper, a more highly substituted cellulose ether and somewhat extreme conditions in the oxidation-hydrolysis step are necessary to obtain solubility comparable to that of nitrogen dioxide oxidation.

Figure 3 illustrates the solubility in 1% sodium carbonate of samples of carboxymethylated cotton (DS 0.1) and of a mercerized control which were oxidized with gaseous nitrogen dioxide for various periods of time at 25°C. The advantage of using the modified cotton is apparent. Strength retentions of the oxidized-etherified

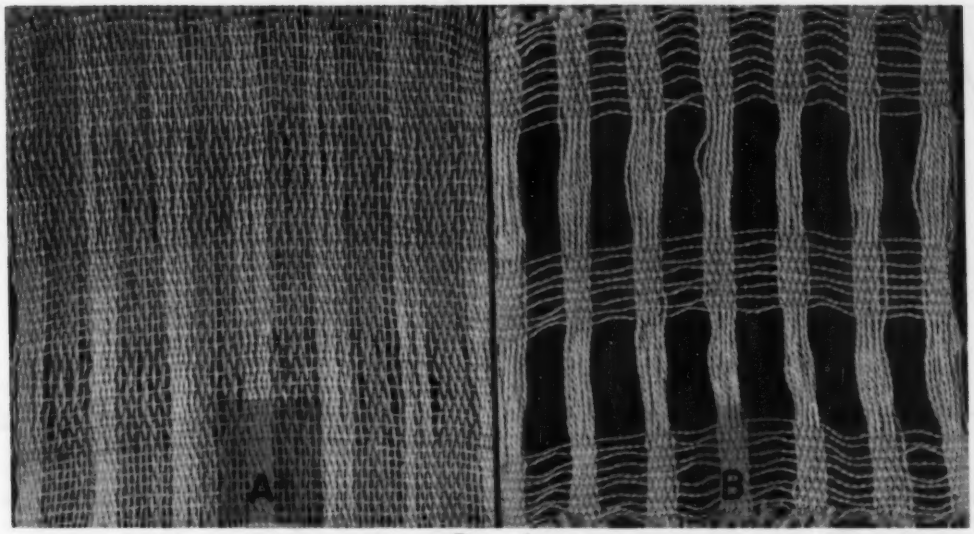

Figure 4
Open-weave fabric prepared using alkali-soluble nitrogen dioxide oxidized-partially carboxymethylated cotton yarns and mercerized cotton yarns. A is the fabric as woven and B is the fabric after dissolution of the soluble yarns in 1% sodium carbonate solution.

TABLE IV
Alkali solubility of partially etherified cottons treated with nitric acid[a]

Partially etherified cotton	*Alkali solubility, %[b]*
Mercerized (control)	65.6
Aminoethylated, DS 0.08	97.1
Carbamoylethylated, DS 0.25	80.5
Carboxyethylated, DS 0.12	100.0
Carboxymethylated, DS 0.10	98.3
Cyanoethylated, DS 0.55	96.3
Hydroxyethylated, DS 0.50	89.5
Phosphonomethylated, DS 0.09	99.3

[a]Samples treated with 70% nitric acid at 26° C for 30 minutes
[b]Solubility determined in 10% aqueous sodium hydroxide at the boil for 10 minutes

samples were good, for example, 68% after 25 hours of treatment as compared with 48% for the corresponding less-soluble oxidized-mercerized sample.

The preparation of an open-weave fabric by chemical means is illustrated in Figure 4. This fabric was hand woven in the laboratory alternating cotton and alkali-soluble yarn (nitrogen dioxide oxidized carboxymethylated cotton yarn). The picture shows the fabric as it was woven and then after dissolution of the soluble yarns with 1% sodium carbonate solution. Although crude, this fabric illustrates the potential of obtaining complicated fabric structure effects without complicated weaving or special looms.

NITRIC ACID TREATMENT——Datlow (*24, 25*) prepared alkali-soluble fabrics by nitration of cotton with nitric acid. This process was used commercially for a time but has since been abandoned.

Partially etherified cottons are easily transformed into alkali-soluble products by treatment with nitric acid. Esterification, oxidation and hydrolysis take place. High solubility is obtained under milder conditions than can be successfully used with unmodified cotton. The solubilities of seven partially etherified cottons treated with 70% nitric acid at 26°C for 30 minutes are shown in Table IV. They are all more soluble than the mercerized control oxidized under these conditions.

The effect of a number of variables in nitric acid treatments are shown in the next three figures.

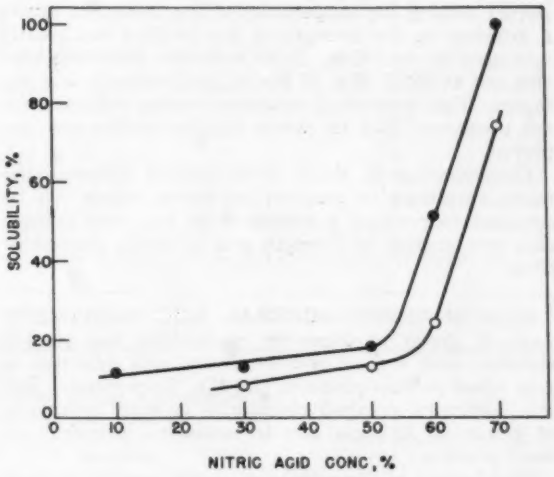

Figure 5
Solubility in hot 10% sodium hydroxide solution of samples of carboxymethylated cotton (●) and of mercerized cotton (○), both treated with various concentrations of nitric acid at 26°C for one hour

The sharp rise in solubility with increased concentration of nitric acid used is shown in Figure 5. In this experiment, carboxymethylated cotton (DS 0.1) and mercerized cotton were treated with various concentrations of nitric acid at 26°C for one hour.

The effect of time of treatment with 70% nitric acid on the alkali-solubility (hot 10% sodium hydroxide solution) of carboxymethylated (DS 0.1) and mercerized cotton is shown in Figure 6. The temperature of reaction was 26°C. The carboxymethylated sample achieved greater solubility in 10 minutes than the mercerized sample did in 75 minutes. Strengths of the carboxymethylated samples were 86 to 65% of the original. The mercerized samples ranged down to 70% of original.

Figure 7 shows the strength and solubility in hot 10% sodium hydroxide solution of carboxymethylated cot-

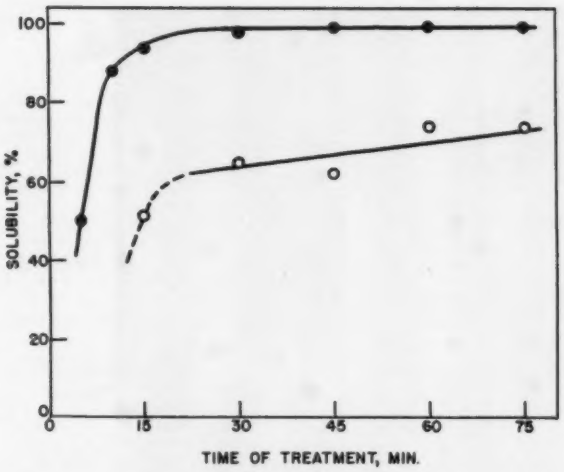

Figure 6
Solubility in hot 10% sodium hydroxide solution of samples of carboxymethylated cotton (●) and of mercerized cotton (○), both treated with 70% nitric acid at 26°C for various times

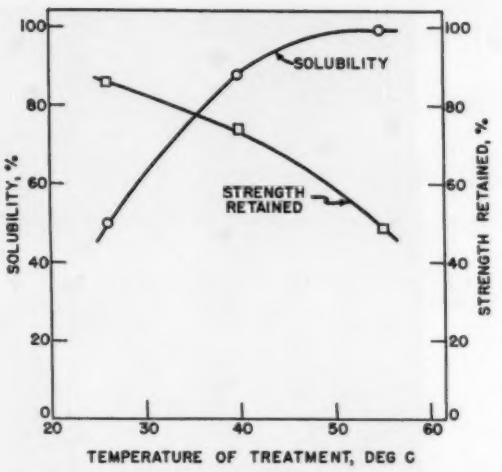

Figure 7
Solubility in hot 10% sodium hydroxide solution (○) and strength retention (□) of samples of carboxymethylated cotton treated with 70% nitric acid for five minutes at various temperatures

ton fabric (DS 0.08) treated with 70% nitric acid for five minutes at various temperatures. As would be expected, raising the temperature of the treatment causes a decrease in the strength of the product but greatly increases its solubility. Even with the treatment carried out at 56°C, 45% of the original strength was retained. This amount of strength is often sufficient for the temporary uses for which soluble textiles are employed.

Consideration of these three figures indicates the many variations in reaction conditions which can be adjusted to produce a product with the most acceptable combination of strength and solubility characteristics.

SODIUM NITRITE-MINERAL ACID TREATMENT ——A group of Japanese researchers has treated cellulose with sodium nitrite-mineral acid mixtures to give alkali-soluble products (*26, 27*). They showed that this treatment resulted chemically in both hydrolysis of glucosidic linkages and in oxidation, primarily at the 6 position.

Modification of their techniques was applied to partially carboxymethylated cotton. In Table V, the properties of fabrics, resulting from the treatment of carboxymethylated cotton (DS 0.08) and mercerized cotton with solutions containing nitric acid and sodium nitrite at 26°C for 30 minutes, are shown. Small concentrations of sodium nitrite used with the nitric acid cause greatly increased oxidative-hydrolytic activity. Thereby, it is possible to produce good alkali solubility with less concentrated nitric acid in relatively short reaction times.

The shorter time necessary is illustrated in Figure 8. Shown are the solubilities (in hot sodium hydroxide solution) of samples of carboxymethylated cotton (DS 0.1) and mercerized cotton treated with 60% nitric acid and with a mixture containing 60% nitric acid and 4% sodium nitrite at 26°C for various periods of time. The figure also demonstrates the added effect of the ether substituents in producing a higher degree of solubility with a given treatment and a higher ultimate solubility within the reaction times studied.

Another technique for the preparation of alkali-soluble products using sodium nitrite and mineral acids

TABLE V
Treatment of partially carboxymethylated cotton and mercerized cotton with nitric acid-sodium nitrite mixtures[a]

Treatment mixture		*Mercerized cotton*		*Carboxymethylated cotton*	
HNO_3	*$NaNO_2$*	*Solubility[b]*	*Str retained*	*Solubility*	*Str retained*
%	%	%	%	%	%
40	—	13.0	79.6	15.6	76.8
40	1	20.9	74.0	37.4	70.3
40	3	28.4	74.0	69.4	67.1
40	5	50.9	75.9	87.9	68.3
50	—	17.8	66.3	23.5	67.2
50	0.5	39.2	67.3	57.8	66.1
50	1	45.2	68.9	95.3	55.8
60	—	14.2	86.3	31.8	73.1
60	0.05	—	—	68.5	73.1
60	0.1	24.8	80.7	71.7	70.9
60	0.25	—	—	94.2	70.7
60	0.5	57.6	72.6	98.2	72.3

[a]Samples of partially carboxymethylated cotton (DS 0.08) and of mercerized cotton treated with mixtures of nitric acid and sodium nitrite at 26° C for 30 minutes
[b]Solubility determined in 10% aqueous sodium hydroxide at the boil for 10 minutes

was investigated. Table VI lists the results obtained when samples of carboxymethylated cotton (DS 0.1) and mercerized cotton were padded to about 75% wet pickup of 40% aqueous sodium nitrite, dried, and then treated with various concentrations of nitric acid or phosphoric acid solutions at 25°C for one hour. Solubilities of the samples in cold 1% sodium hydroxide and hot 10% sodium hydroxide solution are shown. The data seem to indicate that this method of treatment is not as efficient as is treatment of the fabric with the mixed sodium nitrite—mineral acid solution. The results are somewhat surprising when the amount of sodium nitrite present in the fabric is considered.

SODIUM HYPOCHLORITE TREATMENT——The treatment of partially carboxymethylated cotton (DS 0.08) and of mercerized cotton with 5.25% sodium hypochlorite solution, adjusted to pH 7.3, for various periods of time at 26°C, was investigated. This pH was employed because it has been shown that the rate of oxidation is most rapid at the neutral point (*5*). Solubilities of the samples in hot 10% sodium hydroxide solution are shown in Figure 9. Strength retentions of the samples were good, 92.9 to 87.5% of original for the treated-etherified samples, and 86.7 to 82.1% of original for the treated-mercerized samples. These results indi-

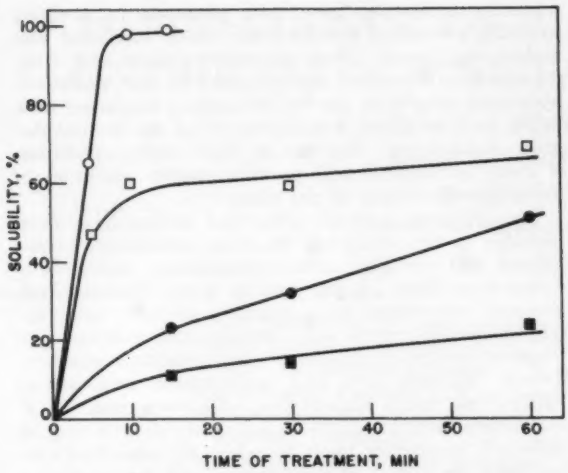

Figure 8

Solubility in hot 10% sodium hydroxide solution of samples of carboxymethylated cotton, treated with 60% nitric acid (●) and with 60% nitric acid-4% sodium nitrite mixture (○), and of mercerized cotton, treated with 60% nitric acid (■) and with 60% nitric acid-4% sodium nitrite mixture (□). Treatments carried out at 26°C for various times.

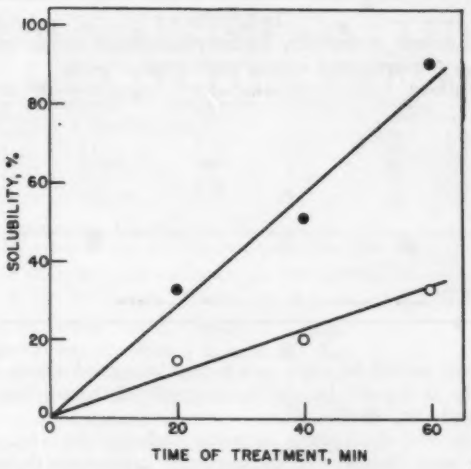

Figure 9

Solubility in hot 10% sodium hydroxide solution of samples of carboxymethylated cotton (●) and of mercerized cotton (○), both treated with 5.25% sodium hypochlorite solution, adjusted to pH 7.3, at 26°C for various times

TABLE VI

Treatment of sodium nitrite-impregnated cottons with mineral acids[a]

	Mercerized cotton			*Carboxymethylated cotton*		
Mineral acid	*% Solubility, hot 10% NaOH solution*	*% Solubility, cold 1% NaOH solution*	*Strength retained %*	*% Solubility, hot 10% NaOH solution*	*% Solubility, cold 1% NaOH solution*	*Strength retained %*
30% Nitric acid	11.2	3.3	98.0	16.3	4.8	86.5
50% Nitric acid	41.1	4.2	88.4	77.4	11.1	72.3
60% Nitric acid	66.3	6.0	83.0	97.8	47.2	64.6
70% Nitric acid	86.0	11.6	66.1	99.3	57.3	71.2
50% Phosphoric acid	7.6	1.1	—	19.2	4.6	—
60% Phosphoric acid	12.1	1.2	—	36.4	5.1	—
70% Phosphoric acid	32.9	2.2	—	96.9	18.3	—
80% Phosphoric acid	80.1	17.6	—	93.2	73.3	—

[a]Samples of partially carboxymethylated cotton (DS 0.1) and of mercerized cotton were padded to about 75% pickup of 40% aqueous sodium nitrite, dried, and then treated with the indicated mineral acid solution at 25° C for one hour.

TABLE VII

Treatment of partially carboxymethylated cotton and mercerized cotton with potassium permanganate solution[a]

Treatment			*Mercerized cotton*		*Carboxymethylated cotton*	
Conc $KMnO_4$ %	*Temperature °C*	*pH*	*Solubility[b] %*	*Str retained %*	*Solubility[b] %*	*Str retained %*
2.5	26	11.0	22.3	59.7	84.1	45.0
2.5	26	6.8	9.6	85.0	18.4	92.5
2.5	26	1.4	31.5	77.3	77.4	77.0
2.5	40	1.4	45.1	44.9	88.2	44.6
5	26	1.2	48.2	42.8	88.7	34.5

[a]Samples of partially carboxymethylated cotton (DS 0.08) and of mercerized cotton were treated with potassium permanganate solutions under the indicated conditions for one hour.
[b]Solubility determined in 10% aqueous sodium hydroxide at the boil for 10 minutes.

cate that the preparation of alkali-soluble textiles using sodium hypochlorite may be worthy of further study.

POTASSIUM PERMANGANATE TREATMENT——The treatment of carboxymethylated cotton (DS 0.08) and mercerized cotton with potassium permanganate under various conditions was compared (Table VII). As in other oxidation-hydrolysis treatments, the treated-etherified cotton had greater solubility under a given set of reaction conditions.

From the data in Table VII, it can be seen that pH of the permanganate solution is the most important single variable in the treatment and has a marked effect on the resulting solubility. Unlike hypochlorite oxidation, with permanganate the reaction proceeds very slowly in neutral media and more rapidly on the acid or alkaline side. As would be expected, an increase in concentration of the permanganate or in the temperature of the treatment produces a more soluble product but with decreased strength retention.

HYDROCHLORIC AND SULFURIC ACID TREATMENTS——Because of the above-described success in producing alkali-soluble textile materials using oxidation and oxidation-hydrolysis agents, the treatment of partially etherified cottons with hydrolyzing, non-oxidizing reagents was also tried. It is possible that, with lower dp, the solubilizing effect of the ether sub-

TABLE VIII

Treatment of partially carboxymethylated cotton and mercerized cotton with mineral acids[a]

Treatment		Mercerized cotton		Carboxymethylated cotton	
Acid, conc	Time (min)	Solubility[b] %	Str retained %	Solubility[b] %	Str retained %
36% HCl	10	29.4	40.1	22.2	18.8
36% HCl	15	31.5	31.4	72.4	9.9
27% HCl	60	15.9	68.6	21.1	70.1
50% H_2SO_4	60	13.8	65.3	15.8	58.8
60% H_2SO_4	60	37.2	31.6	67.5	33.9
70% H_2SO_4	60	[c]	[c]	[c]	[c]

[a]Samples of partially carboxymethylated cotton (DS 0.08) and of mercerized cotton treated with hydrochloric acid and with sulfuric acid at 26°C for the times shown.
[b]Solubility determined in 10% aqueous sodium hydroxide at the boil for 10 minutes.
[c]Sample completely degraded. Dissolved in treatment.

stituent would be sufficient to produce good alkali solubility at a point before the strength of the material is too seriously decreased.

However, the results of using hydrochloric and sulfuric acid treatments on partially carboxymethylated cotton, as shown in Table VIII, were not encouraging. Although products with appreciable solubility could be prepared, the strength was decreased so severely that the products would have little utility as textile materials. In extreme cases, the starting materials lose their fibrous form entirely and are dissolved during the treatment.

USES

Some uses and potential uses of alkali-soluble textile materials already have been mentioned in the foregoing discussion. Figure 2 illustrated the production of lace using alkali-soluble backing cloth. Figure 4 illustrated the preparation of open-weave fabric using alkali-soluble yarn.

A number of other applications are cited in the monograph by Moncrieff (*28*). Among these are: in medical uses as dressings, surgical gauze, wadding, and haemostatic packing; in weaving very fine fabrics; in knitting socks in a continuous string connected by soluble yarn; in making fabric of twistless yarn; in weaving looped and Astrakhan fabrics; in weaving tufted fabric and fabric with intermittent stripes; in embroidered fabric; in fulling rabbit wool; and in novelty yarns and fabrics. In these applications, soluble yarns or fibers are twisted, blended, or woven with traditional textile fibers and are subsequently removed by dissolution to yield the above products. The use of soluble textile members often simplifies a difficult production problem and in some cases, makes feasible previously impossible productions.

A solution to the problem of seam pucker has been proposed by preparing sewing threads which contain some soluble fiber (*29*). On laundering, the soluble fibers dissolve, allowing the thread to adjust in the seam rather than to shrink and cause pucker.

The use of soluble linking thread in the production of skinless frankfurters has been patented (*30*). After steam cooking the frankfurters, the linking thread is dissolved, the casing removed, and each sausage is separated automatically.

A brief section on these and other uses of soluble fibers was included in a previous paper by the authors (*1*).

SUMMARY

New methods for the preparation of alkali-soluble textiles using cotton as a starting material have been discussed. Fabrics and yarns with good strength and solubility properties have been prepared by treating partially etherified cottons with many oxidizing and hydrolyzing agents. With etherified cottons, less drastic reaction conditions are required in the oxidation-hydrolysis step than can be successfuly employed with native or mercerized cotton to produce the desired degree of solubility. The use of such milder conditions is more economical and permits greater retention of the original strength of the fiber.

Nine different partially etherified cottons have been included in this study but the most extensively investigated was partially carboxymethylated cotton. Oxidation-hydrolysis agents studied were chromic acid, chromic acid-oxalic acid mixture, periodic acid, nitrogen dioxide, nitric acid, sodium nitrite-nitric acid mixture, sodium hypochlorite, and potassium permanganate. Sulfuric acid and hydrochloric acid, strong hydrolyzing agents for cellulose, also were used.

Products with the degree of solubility desired may be produced depending upon the partially etherified cotton used, its degree of substitution, and the conditions of time, temperature, and reagent concentrations employed in the oxidation-hydrolysis treatment. Fabrics oxidized with nitrogen dioxide were the most soluble, dissolving readily in cold 1% sodium carbonate solution. Some treatments with periodic acid or with sodium nitrite-mineral acid mixtures resulted in products soluble in cold dilute sodium hydroxide solutions. The other oxidation-hydrolysis treatments resulted in products more stable in mild alkali solution but which dissolved in boiling 10% sodium hydroxide solution.

Chromic acid oxidation of cyanoethylated and of carboxymethylated cotton are successful commercial processes. A number of other methods of preparing alkali-soluble textiles are described which also may have promise for commercial production.

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THE INFLUENCE OF A SURFACE FINISH ON THE FLEX-ABRASION RESISTANCE OF COTTON SATEEN*

CLARENCE J POPE and LOUIS I WEINER
Textile Engineering Laboratory Branch
Textile, Clothing & Footwear Division
Quartermaster Research & Engineering Center
Natick, Mass

The application of surface finishes or lubricants to textile fabrics results in a significant increase in resistance to flex abrasion. A study was conducted to evaluate the level of flex-abrasion resistance of a water-repellent-treated sateen, initially and after supplementary treatment such as laundering and drycleaning; and to develop a system for eliminating the effects of this finish on flex abrasion resistance.

From this investigation, it was found that the sateen fabric treated with Quarpel, the new water-repellent finish developed by the Quartermaster Corps, was approximately six times more resistant to flex abrasion than an untreated sateen. Moreover, the high abrasion resistance of the treated fabric was not effected by such supplementary treatments as wetting-out, laundering, drycleaning or starching. However, the influence of this finish may be essentially eliminated by subjecting the fabric to solvent extraction using chloroform.

INTRODUCTION

ONE of the factors which complicates the interpretation of laboratory abrasion results is the presence on the fabric of a finish or lubricant which may radically modify the level of fabric performance. A considerable amount of research has been done in the field of metals to assess wear damage in terms of surface lubrication. It has been reported (*1*) that wear damage occurring on metal surfaces that are rubbed in the presence of lubricants gives evidence of a breakdown of boundary lubrication at the points of high contact pressure. In fact it has also been reported (*2*) that the efficiency of a lubricant can be stated in terms of the amount of such breakdown which occurs. The use of a lubricant has been proposed as a possible means of extending the wear life of textiles. The Quartermaster Laboratories conducted three separate field tests (*3*) to evaluate the effect of incorporating an aluminum salt-wax emulsion type of water repellent for surface lubrication. The results of the three tests did not show any clear or significant advantage in the use of the water-repellent treatment, although in one test it was concluded that the emulsion might be of "some slight benefit" and in another there seemed to be some preference for the treated garments, particularly in terms of appearance.

Despite the difficulty in determining by field wear tests whether there is any significant difference in the wear of surface-lubricated textile fabrics, it is possible to show by certain laboratory tests a very clear-cut and significant difference in abrasion resistance. One such test is the Flexing Folding Bar Method (5300-CCC-T-191b) for the Stoll-Quartermaster Abrasion Tester. This test shows that the presence of as little as two percent surface finish may increase the abrasion resistance of a cotton fabric by a factor of 5 or more, in terms of actual cycles to rupture. The increase in cycles to rupture is quite significant and depends on the nature of the lubricant and the amount of lubricant that is deposited on the fabric. One study (*4*) reports the effect on both wet and dry fabrics of increasing the amount of lubricant from .01 to five percent. At one percent of lubricant there is a significant increase in the flex abrasion resistance of *dry* fabrics, but the curve relating lubricant content to abrasion resistance in this case levels off at this point and no further increases are noted even up to five percent of lubricant. *Wet* abrasion resistance was not significantly effected by the presence of a lubricant. Another study (*5*) conducted on the flex abrasion resistance of military fabrics indicates that several fabric types finished with a water-repellent treatment possess significantly higher flex-abrasion resistance than fabrics not so treated.

The general purpose of the work described in this report was to assess the level of increase in flex-abrasion resistance resulting from the application of the Quartermaster Corps' new Quarpel water-repellent treatment (*6*); to determine how the level of abrasion resistance changes with repeated laundering and drycleaning; and, finally, to develop a simple system for eliminating the high level of abrasion resistance found in water-repellent-treated fabrics so that laboratory comparisons among treated and untreated fabrics can be made on the basis of structural considerations alone.

EXPERIMENTAL PROCEDURE

The fabric used in this study was a nine-ounce combed cotton sateen designated as A-48. The general physical properties of this fabric are given in Table I. Part of the sateen had been treated with the Quarpel finish by a standard procedure to yield a fabric containing equal parts of a fluorocarbon and a quaternary compound.

TABLE I
Physical properties of nine-ounce cotton sateen fabrics

	Untreated control sateen — A 48	*Quarpel-treated sateen — A 43*
Weight, oz/yd²	8.3	9.2
Yarns/inch, WXF	112 x 68	111 x 69
Weave	5-harness sateen counter of 2.	5-harness sateen counter of 2.
Breaking strength (grab) lbs WXF	182 x 162	160 x 150
Tearing strength (Elmendorf) lbs WXF	4.5 x 6.1	5.7 x 8.6
Air permeability, ft³/min/ft²	4.5	4.3

*Textile Engineering Laboratory Report No. 271

Before abrasion tests were conducted, the samples were conditioned for not less than four hours at a temperature of 70°F and a relative humidity of 65 percent. The flex abrasion procedure described in Federal Specification CCC-T-191b was employed. Blade #396 was used at a tension of four pounds and a pressure of one pound. All of the fabric specimens were abraded with the back (filling side) in contact with the blade of the tester. This procedure was followed because the standard sateen fabric is conventionally worn with the filling side on the outside of the garment.

SUPPLEMENTARY FABRIC TREATMENTS——The Quarpel-treated fabric and an untreated control were subjected to five supplementary processes designed either to test the inherent effect of the process upon abrasion resistance or to eliminate the effect of the Quarpel treatment completely. The five treatments were: wetting-out, laundering, drycleaning, starching, and solvent extraction. The *wetting-out* treatment consisted of immersing the fabric specimens in water containing one gram of Triton X-100 per liter, followed by rinsing and drying at room temperature. The *laundering* procedure was the standard cotton mobile procedure described in Method 5556.1 of CCC-T-191b. A total of 15 laundering cycles were employed and the samples were tested for abrasion resistance after launderings 1-5 inclusive and after the 10th and 15th launderings. The *drycleaning* method was a modification of two standard procedures described in CCC-T-191b. The tumbling jar apparatus and the amounts of reagents prescribed in method 5508 were used, and the sequence of operations using the types of reagents specified for method 5509 were followed. Briefly, this involved rotating the jar containing the specimens for 30 minutes in Stoddard solvent with drycleaning soap added, then for 30 minutes in clean Stoddard solvent, followed by 30 minutes in clean perchlorethylene. The specimens were then rinsed with distilled water in the rotating jar for five minutes. The rinsing procedure was repeated a second time and then the specimens were allowed to air dry. *Starching* was accomplished by soaking the fabric specimens in a standard starch solution for approximately two minutes, extracting the excess starch, and then pressing at 300°F. The pick-up in weight of the starched fabrics was approximately 0.3 percent and 1.6 percent for the Quarpel-treated and untreated control sateens, respectively. *Solvent extraction* was conducted in a Soxhlet extractor, using chloroform as the solvent, and following the procedure described in Method 2611.1 of CCC-T-191b.

RESULTS AND DISCUSSION

ABRASION RESISTANCE OF THE INITIAL FABRICS——Of the initial fabrics, the Quarpel-treated showed a remarkable increase in cycles to rupture. The increase of the specimens abraded in the *warp* direction (filling-flush side to the blade) ranged from just over 400 cycles to over 2400 cycles. In the filling direction (again filling-flush side to the blade) the increase ranged from approximately 200 cycles to slightly under 1600 cycles. The blade of the abrader was carefully wiped with Stoddard solvent before the test of each individual specimen in order to make certain that any accumulation of finish would be removed from the blade and not influence the balance of the test.

The differences between the number of abrasion cycles in the warp and filling directions, both for the Quarpel-treated and untreated fabrics, must be a function of the orientation of the yarn structure in relation to the direction of application of stress by the hardened steel blade. In both warp and filling tests, it was the filling yarns which took the brunt of the abrasive forces initially, since on the filling-flush side of the sateen the warp yarns are buried for the most part and appear at the surface only at the interlacings, which occur only once for every five yarns in the fabric structure. In the filling-direction tests, the motion of the blade paralleled the longitudinal axis of the filling yarns; in the warp-direction tests, the motion of the blade was perpendicular to the filling yarn axis. In the latter tests, it is conceivable that relative motion of the filling yarns can occur and that this tends to absorb some of the energy from the blade by translation of the filling yarn mass and as a result, the rate of breakdown of the individual fibers would decrease and a higher level of abrasion resistance could be expected from warp direction tests.

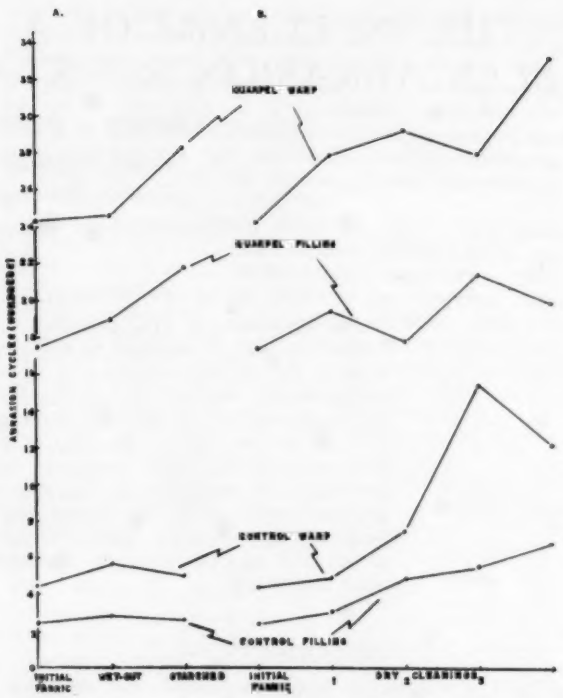

Figure 1
Effects of the wet-out action, starching and drycleaning on flex abrasion resistance of sateen fabrics

The exact role of the surface finish in increasing abrasion cycles to failure cannot, of course, be deduced from a simple comparison of abrasion cycle values. It is conceivable that a finish may change the rate of abrasion by actual modification of the mechanical properties of the yarn structure or, more conventionally, it might act in the same way that a monomolecular film of lubricant does in the rubbing of two surfaces—by reducing the forces of adhesion and the shear strength. A second observation that may shed some light on this phenomenon is mentioned later in connection with the marked reduction in cycles to failure of the Quarpel-treated fabric after solvent extraction with choloroform. It is significant to note in this connection, however, that results of a preliminary test showed that the fabric so extracted still maintained a high level of water repellency. This indicates that the substance or substances producing the high level of abrasion resistance

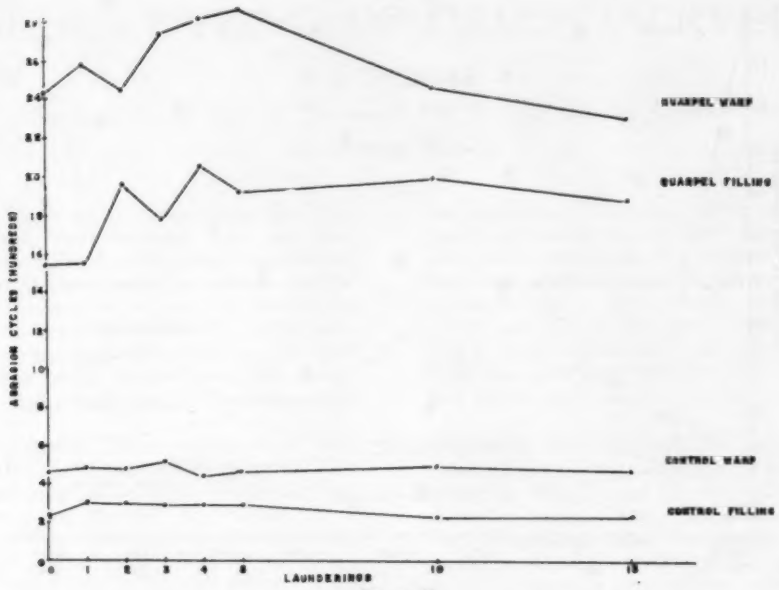

Figure 2
Effects of laundering on the flex abrasion resistance of sateen fabrics

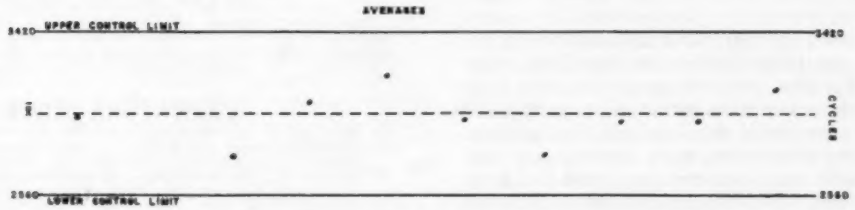

Figure 3
Statistical control chart for flex abrasion resistance of Quarpel-treated sateen—warp direction

are not necessarily the same substances required to achieve water repellency.

ABRASION RESISTANCE AFTER WETTING-OUT, LAUNDERING, AND DRYCLEANING———As indicated in Figures 1 and 2, there appeared to be fluctuations in the curves representing changes in abrasion resistance with wetting-out, laundering, and drycleaning that apparently are related to the particular operations that were involved. Because of the greater number of cycles to rupture for the Quarpel-treated fabric, these changes are magnified in plotting the data. Despite the trend toward increasing or decreasing abrasion resistance, there are no significant statistical differences that can be attributed to wetting-out, drycleaning, or laundering. In fact, even after continued laundering of up to 15 cycles, the differences in abrasion resistance are not significant. This was confirmed by preparing a control chart (Figure 3) for the warp direction of the *unlaundered* Quarpel-treated fabric in which the 3σ control limits ranged from 2560 to 3420 cycles. In the case of the *laundered* Quarpel-treated fabric, the lowest value for any given laundering cycles was 2300 and the highest 2900. There is some question about the drycleaning operation since, in the procedure followed, it is possible that some of the drycleaning soaps were not completely rinsed out of the fabric and that a build-up of drycleaning soaps would have the same effect on the control fabric as the addition of a water repellent or lubricating agent; as a result, a significant increase in flex cycles to rupture may follow an increase in the number of drycleanings.

ABRASION RESISTANCE AFTER STARCHING ———Starching also did not appear to produce any significant change in the abrasion resistance either of the Quarpel-treated or control fabric. Starching of fatigue uniforms is a critical problem for the military services in terms of the evaluation of field wear. In peace time, it is customary for field commanders to insist upon the starching of fatigues so that they will present a neater and more military appearance. However, it is believed that, by thus immobilizing the yarn systems of a sateen weave, some of the beneficial effects in wear resistance and tear strength would be lost. Apparently it will be necessary to conduct field evaluation studies to resolve this factor since these laboratory data do not indicate the existence of a significant effect.

ABRASION RESISTANCE AFTER SOLVENT EXTRACTION———As shown in Figure 4, one solvent extraction produced a marked drop in the flex abrasion resistance of the Quarpel-treated fabric. In the *warp* direction the Quarpel-treated fabric dropped from approximately 2400 to 800 cycles, which is just about 200 cycles above that of the control fabric after one ex-

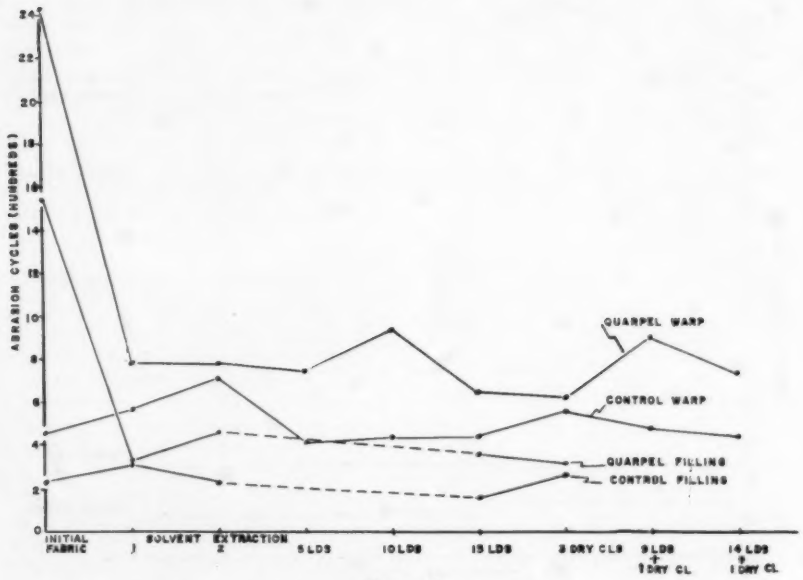

Figure 4
Effects of solvent extraction on the flex abrasion resistance of sateen fabrics

traction. In the *filling* direction, the Quarpel fabric dropped almost to the level of the control fabric after one extraction (1600 to 300). The second solvent extraction did not appear to produce any significant effect beyond that of the first. Solvent extractions also were conducted after three laundering intervals (the 5th, 10th and 15th) and after three drycleanings. In addition, solvent extraction procedures were carried out (for warp direction tests only) on specimens that had been laundered nine and 14 cycles respectively, followed by one drycleaning. The results of these tests showed no further decrease in abrasion resistance over that previously determined. Although in all of these instances the level of abrasion resistance of the Quarpel-treated fabric, in warp and filling directions respectively, was above that of the control, the differences are not statistically significant.

CONCLUSIONS

Several general conclusions may be reached from this study. First, it is important to be aware of any surface finish or lubricant that may be present on a textile fabric that is to be subjected to flex abrasion. Second, it is desirable to obtain a portion of the fabric prior to the application of the finish and to use this as a control in the laboratory tests. If it is not possible to obtain an unfinished control sample, a procedure should be evolved for removing the finish (without damaging the fabric), or at least that portion of the finish which affects abrasion resistance, so that the influence of the fabric structure as well as of the finish may be estimated.

Quarpel-treated fabric was found to have abrasion resistance approximately six times that of the untreated control. This difference was essentially eliminated by the solvent extraction method used, while the other supplementary treatments had little or no effect on abrasion resistance.

It must be borne in mind that several types of finishes, including some resins, have been reported to reduce wear in use because of their tendency to lock the yarn systems in place and thus reduce the tear strength of the fabric. Therefore it is important to learn whether or not the finish significantly affects the wear of the fabric in actual use as distinct from the abrasive wear that can be observed in the laboratory.

ACKNOWLEDGMENTS

The authors express their appreciation to Editha Stone for her editorial review of the report; to Harry Smith for his advice and assistance in conducting the abrasion tests; and to G Dias for his assistance in the laundering and drycleaning phases of the study.

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TABLE II
Summary data on flex abrasion resistance of cotton sateen fabrics

	Untreated control Sateen — A 48	*Quarpel-treated Sateen — A 43*
Flex abrasion resistance (Stoll) cycles, filling flush, WXF —		
Initial fabric	460 x 240	2430 x 1540
Wet-out fabric	570 x 290	2460 x 1900
Starched fabric	510 x 270	2840 x 2200
Laundered fabrics —		
1st	490 x 300	2590 x 1550
2nd	480 x 300	2460 x 1970
3rd	520 x 300	2750 x 1790
4th	430 x 300	2830 x 2060
5th	470 x 300	2880 x 1930
10th	500 x 230	2470 x 1990
15th	470 x 230	2310 x 1880
Drycleaned fabrics		
1st	500 x 320	2800 x 1950
2nd	750 x 500	2930 x 1880
3rd	1550 x 560	2800 x 2150
4th	1230 x 680	3340 x 2000
Solvent-extracted fabrics		
1st	570 x 330	780 x 330
2nd	720 x 230	780 x 480
After laundering		
5	530 x *	750 x *
10	540 x *	940 x *
15	450 x 170	640 x 360
After drycleaning		
3	570 x 260	620 x 320
After laundering & drycleaning		
9 & 1	480 x *	900 x *
14 & 1	450 x *	740 x *

*Sample was of insufficient size to complete both warp and filling direction tests.

CONTINUOUS DYEING OF ORLON ACRYLIC TOW

R J THOMAS

Organic Chemicals Dept, Dyes & Chemicals Div, E I duPont de Nemours & Co, Inc
Wilmington 98, Del

YARNS made of high- and low-shrinkage fibers, ie, of unrelaxed and steam-relaxed tops, are employed to obtain high-bulk characteristics in garments of Orlon. Treatment of these yarns as such, or in fabrics or garments, in water at or near the boil or in steam imparts the high-bulk characteristics. With yarn, this is satisfactorily accomplished only in modified skein-dyeing machines of the Hussong or Obermeier-Stienen types or in packages wound on Du Pont cellulose sponge cores (*1*).

Several mills are dyeing Orlon acrylic tow by a batch process in which the tow is plaited or packed into a basket, the basket then placed in a dyeing kier and the dye liquor circulated through the basket. It is essential, as in all dyeing operations of this kind, that the material be packed uniformly to avoid channeling and to allow good circulation of the dye liquor.

It is, however, feasible to dye the tow by a continuous process in which packing difficulties are avoided and if the equipment is properly arranged there can be increased productivity, possibly at lower costs. This process is based on the pad-steam process using ethylene carbonate* as a pad-liquor additive (described in U S Pat 2,654,652 of Linton G Ray Jr, assigned to Du Pont). In the pad-steam process, Orlon tow is dyed without previous scouring or wetting out. Care is taken to insure that the six or eight component ropes are free from crossovers, tangles, and loose fibers. The tow is padded at 120°F (100% pickup) with an aqueous solution of cationic dyes or a dispersion of disperse dyes containing ethylene carbonate. The wet tow is passed directly into a steamer having driven rolls to avoid undue tension on the tow, and is steamed for five minutes at 212°F or slightly higher. Dyed tow emerges from the steamer through a water seal and passes through a series of boxes where it is rinsed with running water (heavy shades should be scoured with a nonionic surfactant, eg, Capracyl Leveling Salt, and acetic acid). A softener and/or antistatic agent, eg, Avitex NA and Nopco LV 40, can be applied in the last rinse. After rinsing, the dyed tow is squeezed and dried.

It appears entirely feasible to design equipment in which several strands of tow could be processed parallel to one another. A good rate of production could be assured in this case.

The dyed tow is converted to top in the Turbo stapler or Pacific converter. Conceivably, the stapler or converter could be placed in series with the pad-steam range.

The following observations were made on tow dyed by this procedure:

PHYSICAL PROPERTIES——Tow dyed by the pad-steam method showed an increase in tensile strength (an average strength increase from 35 to 43 pounds). In laboratory runs, some of the crimp was lost and, where essential, could be restored in subsequent processing. In addition to loss of crimp, the tow was slightly stretched (4.6 to 7.8%), but it is probable that in commercial operation, using a steamer equipped throughout with driven rolls, little or no stretching would take place. Tow dyed by the pad-steam process had a silkier appearance and loftier hand than batch-dyed tow, processed satisfactorily in the Turbo stapler, and made excellent knitting yarns.

SHADE AND STRENGTH——In general, shades dyed either by the pad-steam process or in the laboratory in reflux tubes (*2*) were close in strength, except for heavy blacks, but differed slightly in shade because of variations in exhaust between the two methods. Desired shades can be approximated by pot or reflux dyeings and further refined by short runs on the pad-steam unit. Specific shades were reproducible from one run to another and should present no special problems on a commercial scale.

FASTNESS PROPERTIES——The dyes recommended for pad-steam application exhibited good fastness to crocking, perspiration, and the AATCC No. 3 Wash Test. Some of the older basic dyes were not fixed as completely as in batch dyeings and were deficient particularly with respect to staining of nylon, silk and wool in alkaline perspiration tests. While disperse dyes were fixed in noticeably heavier shades than in batch dyeings, these heavy shades (40.0 g/l) were deficient in the AATCC No. 3 Wash Test. Penetration into individual fibers was complete with most dyes.

Numerous cationic and disperse dyes were evaluated in the laboratory for application by this process. An account of this evaluation should be of assistance to anyone contemplating the continuous dyeing of tow.

CATIONIC DYES

APPLICATION PROCEDURE——A standardized form of dye application was used in these tests. Dye was dissolved in water and acetic acid by heating to about 160°F, ethylene carbonate and the other additives were dissolved in water, added to the dye solution, and the pad liquor brought to the required volume with more water. Paddings were made at 120°F to 130°F, one dip and one nip, squeezed to 100% pickup, and the tow steamed without drying. After steaming, the dyed tow, passed through a water seal, was squeezed to 50 to 60% pickup and was rinsed at room temperature. The rinse water was examined for "bleed-off" and the wet tow tested for "mark-off" by squeezing it between folds of muslin.

ACIDITY OF PAD LIQUOR——Aqueous solutions of various cationic dyes exhibited the pH values which are given in Table I.

These solutions were applied "as is", buffered to 4.5 to 5.5 with sodium acetate or acetic acid as required, and with 5 g/l to 10 g/l acetic acid added. The best results from both tinctorial value and fastness were obtained with the added acetic acid. Dyeings "as is" were

*Toxicological data indicate use of this product to be nonhazardous; however, it is suggested that those contemplating its use verify this by communicating with the manufacturers and vendors—Jefferson Chemical Co, Inc, 260 Madison Ave, New York 16, NY, and Union Carbide Chemicals Co, 30 East 42nd St, New York 17, NY.

TABLE I

Acidity of aqueous solutions of cationic dyes

Dye	*Conc (g/l)*	*pH*
CI Basic Yellow 13	40	5.2
CI Basic Yellow 11	40	4.8
CI Basic Orange 2	10	2.9
CI Basic Orange 21	40	3.3
Sevron Orange L	40	6.2
CI Basic Brown 4	10	2.7
CI Basic Brown 1	10	3.0
CI Basic Violet 14	10	5.0
Sevron Brilliant Red B	40	3.8
CI Basic Red 14	40	3.2
Sevron Red L	40	6.0
CI Basic Blue 21	40	5.3
CI Basic Blue 22	40	4.3
CI Basic Blue 4	40	4.8
CI Basic Green 1	10	2.2
CI Basic Green 4	10	3.0

particularly weak with the solutions of Sevron Orange L and Sevron Red L, which had a pH of 6 or higher, and with those of the older basic colors buffered with sodium acetate. Formic, hydroxyacetic, and oxalic acids gave results noticeably inferior to those obtained with acetic acid.

ETHYLENE CARBONATE CONCENTRATION—— Selected cationic dyes were evaluated (in self shades) as to the maximum practical concentration at which their degree of fixation would compare with that observed in aqueous dyeings made at 212°F under reflux. The dyes were divided into two groups—those which would be readily fixed with 50 g/l ethylene carbonate and those which showed marked improvements with the 100 grams/liter. Ratings appear in Table II.

CI Basic Blue 21 did not fix well with either 50 g/l or 100 g/l ethylene carbonate and, therefore, is not recommended for pad-steam application although it has been used successfully in light shades by one firm operating the process. This firm has also used Sevron Orange CL with considerable success.

DISPERSE DYES

Disperse dyes were satisfactorily fixed using either ethylene carbonate or resorcinol (50 g/l) and steaming for five minutes. Substitution of resorcinol for ethylene carbonate had no adverse effect on the tinctorial value or on the lightfastness of the disperse color dyeings. With these dyes, no surfactants, acid or sodium acetate were required, but the dye was dispersed with 1.0 to 3.0 g/l Compound No. 8-S. While much higher concentrations of dye (40 g/l) can be fixed by the pad-steam process than by conventional dyeing, heavy shades were inferior in both washing and perspiration fastness to those produced with cationic dyes; hence, disperse dyes would be recommended only for pastel or light shades.

COMPOUND DYEINGS

In general, the behavior of mixtures of Sevron basic dyes could be predicted on the basis of results obtained with the individual dyes but with mixtures of Sevron and older basic dyes erratic results were obtained. The older basic dyes, particularly CI Basic Violet 14, were "blocked out" in compound dyeings when used in the higher concentrations in which they could be applied as self-shades; excessive loss of dye in the rinse and decreased perspiration fastness resulted. This is an economic disadvantage as relatively high concentrations of CI Basic Violet 14 and CI Basic Green 4 are required in the most economical navy and black shades. Combinations of dyes to produce navy and black shades of satisfactory fastness properties have been

TABLE II

Limiting cationic dye concentration for efficient fixation in pad-steam process

Dyeings	*Maximum practical concentration (g/l)*	*Fixation efficiency at maximum concentration (%)*
50 g/l ethylene carbonate		
CI Basic Yellow 13	30	90-100
CI Basic Yellow 11	40	90-100
CI Basic Orange 21	40	90-100
CI Basic Orange 2	10	90-100
CI Basic Brown 1	10	80
CI Basic Violet 14	7	85
CI Basic Blue 22	40	90-100
CI Basic Blue 4	40	90-100
Sevron Brilliant Red B	40	90
CI Basic Red 14	40	90
CI Basic Green 1	6	65
100 g/l ethylene carbonate		
Sevron Orange L	30	90-100
Sevron Red L	40	90-100
CI Basic Green 4	10	90-100

developed but these recommendations and especially any major departure from these recommendations (which follow) should be tested carefully under the particular conditions in the plant before mill use.

Some dye combinations developed in the laboratory during this investigation are described. These are based on 100% pickup.

Skipper Blue

4.5 g/l CI Basic Yellow 11
9.5 g/l CI Basic Red 14
22.5 g/l CI Basic Blue 4
50.0 g/l ethylene carbonate
2.5 g/l acetic acid (glacial)
1.25 g/l sodium acetate
2.5 g/l nonionic surfactant, such as Capracyl Leveling Salt or Alkanol HCS Surface-active Agent (optional)

This shade was run a number of times in demonstrations for commercial dyers interested in the pad-steam process and consistently gave uniformity of shade from end to end with no marking off and with only a trace of color in the rinse water.

Jockey Red

10.0 g/l CI Basic Yellow 11
35.0 g/l CI Basic Red 14
3.5 g/l CI Basic Blue 22
50.0 g/l ethylene carbonate
5.0 g/l acetic acid (glacial)
2.5 g/l sodium acetate

This shade was also run a number of times to demonstrate the process. Tow dyed with this formulation was successfully processed through the Turbo stapler and spun into yarns which were knit into sweaters. These were reported to be superior in handle to sweaters made from batch-dyed tow. Over runs as long as four hours, no marking off was observed and there was little loss of dye on rinsing. Reflux dyeings made with the same color compositions were of the same strength but duller.

Brown

22.0 g/l CI Basic Yellow 11
16.5 g/l CI Basic Red 14
1.76 g/l CI Basic Green 4
50.0 g/l ethylene carbonate
2.5 g/l acetic acid (glacial)
1.25 g/l sodium acetate

A slight loss of green dye in the rinse water was evident, but this loss could probably be eliminated, if desired, by increasing the ethylene carbonate concentration.

TABLE III

Effect of ethylene carbonate concentration on fixation of cationic plum formulation

	AATCC perspiration (staining) Acid*				Alkaline*				Dye lost in rinse water	Wet mark-off
	A	N	S	W	A	N	S	W		
Control (reflux)	5	5	5	5	5	5	5	5	nil	nil
Ethylene carbonate										
50 g/l	5-4	3	3	4	5-4	3	3	4	notc	slight
75 g/l	5	5-4	5-4	5	5	4	4	5-4	slight	trace
100 g/l	5	5-4	5-4	5	5	4	4	5-4	trace	nil

*Fibers not indicated showed a 5 rating.

Green

1.8 g/l CI Basic Yellow 13
3.6 g/l CI Basic Blue 22
50.0 g/l ethylene carbonate
5.0 g/l acetic acid (glacial)
1.25 g/l sodium acetate

This combination was completely fixed in less than five minutes' steaming and showed no color at all in the rinse water.

Plum

10.2 g/l CI Basic Red 14
1.6 g/l CI Basic Violet 14
0.5 g/l CI Basic Green 4
50-75-100.0 g/l ethylene carbonate
10.0 g/l acetic acid (glacial)
2.5 g/l nonionic surfactant, such as Capracyl Leveling Salt
1.25 g/l sodium acetate

The pad-steam dyeing of this formulation was slightly weak versus a reflux dyeing using the same concentration of dye (owf). Fastness characteristics of the pad-steam dyeing improved as the concentration of ethylene carbonate was increased. Fastness data are given in Table III.

NAVIES——Navy shades having 5-4 ratings with respect to perspiration and AATCC No. 3 Wash Test were made with:

0.0- 4.0 g/l CI Basic Yellow 11
12.0-19.0 g/l CI Basic Red 14
8.0 g/l CI Basic Green 4
0.0- 1.0 g/l CI Basic Blue 22
100.0 g/l ethylene carbonate
10.0 g/l acetic acid (glacial)
2.5 g/l nonionic surfactant, such as Capracyl Leveling Salt
1.25 g/l sodium acetate

The substitution of Sevron Brilliant Red B or of CI Basic Violet 14 in the above formula gave appreciably inferior perspiration fastness. Decreasing the ethylene carbonate concentration caused increased color in the rinse water and increased mark-off on the rolls.

BLACKS——Considerable difficulty was encountered in making black mixes which, on application by the pad-steam process, would have fastness to washing, crocking and perspiration comparable to blacks obtained in reflux dyeing. This difficulty arose because the tinctorial value and fastness of mixtures of Sevron dyes and the older basic dyes varied greatly in specific mixes and could not be predicted on the basis of individual dye behavior. The most satisfactory combinations for pad-steam production of black consisted of CI Basic Yellow 11, Sevron Orange L, CI Basic Violet 14 and CI Basic Green 4, applied with 150 g/l ethylene carbonate. The following formula is also economical; the higher ethylene carbonate concentration yielded slightly better wetfastness.

10.5 g/l CI Basic Yellow 11
12.0 g/l Sevron Orange L
3.0 g/l CI Basic Violet 14
6.0- 8.0 g/l CI Basic Green 4
100.0-150.0 g/l ethylene carbonate
10.0 g/l acetic acid (glacial)
2.5 g/l nonionic surfactant, such as Capracyl Leveling Salt
1.25 g/l sodium acetate

BLEACHING OF TOW

The whiteness of Orlon tow was improved by padding with 10 g/l of oxalic acid (without ethylene carbonate and dye) and steaming for five minutes; the reflectance of the tow at 400 millimicrons was 77% before treatment and 85% after treatment. In addition, the treated tow showed noticeably greater fluorescence in ultraviolet light.

VARIATIONS IN FIXATION CONDITIONS

Some attention was given to the effect of variations in fixation conditions. The more important results are summarized as follows:

STEAMING TIME——With CI Basic Yellow 13, CI Basic Orange 21, and Sevron Brilliant Red B at 5.0 g/l, satisfactory fixation was attained with two minutes' steaming but with CI Basic Blue 22, CI Basic Blue 4, and the disperse dyes, a full five minutes' steaming was required. For concentrations of these dyes of 10 grams/liter and higher, a full five minutes' steaming is necessary; hence, shortening the steaming time does not appear realistic as it is likely that disperse dyes rather than cationic dyes would be used in the light shades.

As full shades of black required about 150 g/l ethylene carbonate in the pad liquor, it was hoped that lower concentrations could be used if the steaming time was extended. With a black of the following formulation:

8.4 g/l CI Basic Yellow 11
22.0 g/l CI Basic Orange 21
36.0 g/l CI Basic Red 14
15.0 g/l CI Basic Green 4,

the same strength and freedom from "bleeding" in the rinse water were not obtained using 50 g/l to 100 g/l ethylene carbonate and steaming for ten minutes at temperatures up to 260°F as was obtained with 150 g/l ethylene carbonate and steaming for five minutes at 212°F.

SUPERHEATED STEAM —— Paddings at 40 grams/liter were made with the following dyes:

CI Basic Yellow 11
Sevron Orange L
Sevron Brilliant Red B
CI Basic Red 14
Sevron Red L
CI Basic Blue 21
CI Basic Blue 22
CI Basic Blue 4

and at 10 grams/liter with CI Basic Green 4 on Orlon type 42 tow. These paddings were steamed, without drying, for five minutes at 212°F and for five minutes at 260°F, rinsed, and dried.

There was an average gain in strength of only about 10% with the use of superheat, so it is questionable if the use of superheat can be justified on economic grounds.

DRY HEAT———CI Basic Yellow 11 and CI Basic Orange 21, each 40 g/l, were padded on tow from solutions containing 0, 25 and 50 g/l ethylene carbonate. Without previously drying, the padded tow was heat-treated at 350° to 400°F for one, three and five minutes.

While more dye was fixed in the presence of ethylene carbonate than from the aqueous solution, even 25 g/l ethylene carbonate at 350°F caused a noticeable harshening and stiffening of the tow that could not be tolerated in commercial practice. Dye fixation was maximum at 400°F with a five-minute heating but was skittery and less than 70% of that obtained by the pad-steam process. In addition, such colors as CI Basic Orange 21 and CI Basic Yellow 11 gave much redder and duller dyeings by dry heat than with steam.

CONCLUSION

In conclusion, the pad-steam process described in this article is a practical means of dyeing tow of Orlon for the production of high-quality, high-bulk yarns.

ACKNOWLEDGMENT

The participation of R P Carney, E F Gamble, C F Miller, and P L Speakman in the development of the continuous pad-steam process of dyeing of Orlon acrylic tow is gratefully acknowledged.

LITERATURE CITED

(1) *Dyes & Chem Tech Bull (du Pont) 16*, 51 (1960).
(2) Landerl, H P, *Am Dyestuff Reptr 44*, No. 19, 662 (1955).

TRADEMARKS

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FUTURE PAPERS

Following is a list of specially contributed papers which will appear in future issues of *American Dyestuff Reporter:*

"Preparation and Properties of Fibrous Partial Isobutyrates of Cellulose"———Hubert St Mard, Carl Hamalainen and Albert S Cooper Jr, Southern Regional Research Laboratory

"Use of Modern Home Laundry Equipment. II. Cleaning and Wrinkling Effects of Low-temperature Wash Solutions on Naturally Soiled Blouses"———Nada D Poole, Enid S Ross, and R Katherine Taube, Clothing and Housing Research Div, ARS, USDA

"The Effect of the Unsaturated Group on the Weathering of Chemically Modified Cottons"———Ricardo H Wade, Carl Hamalainen and Albert S Cooper Jr, Southern Regional Research Laboratory

"Papin and His New Digester———Inventions of the Pressure Kier and Pressure Dyeing"———Sidney M Edelstein, Dexter Chemical Corp

"Evaluation of Variables in the Pressure Kier Bleaching of Cotton"———J J Gaido, and H D Terhune, Electrochemicals Dept, E I duPont de Nemours & Co, Inc

"Control of Formaldehyde Release from Fabric Finished with Dimethylol Ethyleneurea"———J David Reid, Robert M Reinhardt, Terrence W Fenner, and James A Harris, Southern Regional Research Laboratory

"The Relationship between the Dyeing Conditions and the Practical Saturation Values of Disperse Dyes on Polyester Fibers"——— J Carbonell, Sandoz Ltd

"How Laminating Techniques Affect Corrosion Resistance of Reinforced-plastic Equipment for Textile Chemical Operations"——— S S Feuer and A F Torres, Atlas Powder Co

"APO, A Durable Flame Retardant for Cotton"———George L Drake Jr, Leon H Chance, John V Beninate, and John D Guthrie, Southern Regional Research Laboratory

"Estimated Costs and In-Service Evaluations of Chemically Modified Cotton Fabrics"———K M Decossas, H L E Vix, and E L Patton, Southern Regional Research Laboratory

"Preparation and Evaluation of Selected Aliphatic Acid Esters of Cotton Fabric"———Manuel D Cruz—Lagrange, Carl Hamalainen, and Albert S Cooper Jr, Southern Regional Research Laboratory

ADR ABSTRACTS

Tricel: Its Development, Manufacture, Properties, and End-uses

Alford, M W, *J Textile Inst 52*, P242-P255, June, 1961

"Tricel" is British Celanese's name for cellulose triacetate. The research work leading to the production of this fiber is described in detail. It is interesting to note that a triacetate fiber, "Lustron", was manufactured in the U S as early as 1914, but was abandoned in 1927. "Tricel", made in Britain, and the equivalent fiber "Arnel", made by American Celanese, were introduced to the trade in 1954.

Triacetate fibers may be produced by three principal types of filament-spinning processes: dry-, wet-, and melt-spinning, all of which are described.

Tricel yarns are available both as continuous-filament and as staple. In addition to the standard or undyed type, Tricel is spun-dyed with various colored pigments and sold under the trademark "Duracol".

To facilitate the processing of Tricel staple on the various systems for "spinning" staple into yarns, it is supplied with appropriate degrees of crimp.

The distinctive property of Tricel is its ability to take a permanent set. In this respect, it is more akin to synthetic fibers than to secondary acetate. In other properties, it resembles the secondary acetate, eg, in strength, extensibility, handle and drape. The strength characteristics of the acetates are similar to those of wool, ie, they have tenacities of 1.2 to 1.4 gpd. Wool has a greater extensibility, ie, 28 to 40% as against 20 to 30% for the acetates.

As the acetyl content of cellulose acetates increases, there are falls in density, in affinity for water, polar and organic solvents, in moisture regain, and in thermal and electrical conductivities. The melting point of triacetate is higher than that of diacetate. Triacetate has the higher safe-ironing temperature, it has a higher resistance to water at the boil, and it has to be dyed at a higher temperature.

Tricel can be set either by dry heat at 180-200°C or by steam at pressures of 20 psi (126°C). Steam setting has not been generally adopted for woven fabrics, but is preferred for knit goods, according to the author.

The advantages of heat-setting include a higher softening temperature (ie, greater resistance to ironing), a decreased water imbibition and moisture regain (ie, quicker drying), and improved dimensional stability to washing. Another property of set triacetate yarn is a greater resistance to wet creasing, and consequent "easy-care" performance in laundering.

Pleated fabric blends containing Tricel are preferably set in steam under pressure, the exact conditions varying with the blend and the construction of the fabric. Women's durably pleated skirts afford a large outlet for Tricel (eg, blends of two parts Tricel and one part rayon, and three parts Tricel and two parts wool).

Blends of Tricel with other fibers (eg, rayon, wool, nylon and Terylene), used in men's suits, have good wrinkle resistance as well as good retention of trouser creases. Other uses for Tricel include sport shirts, blouses, lingerie and linings.

(*Additional Abstracts on pages 129-30*)

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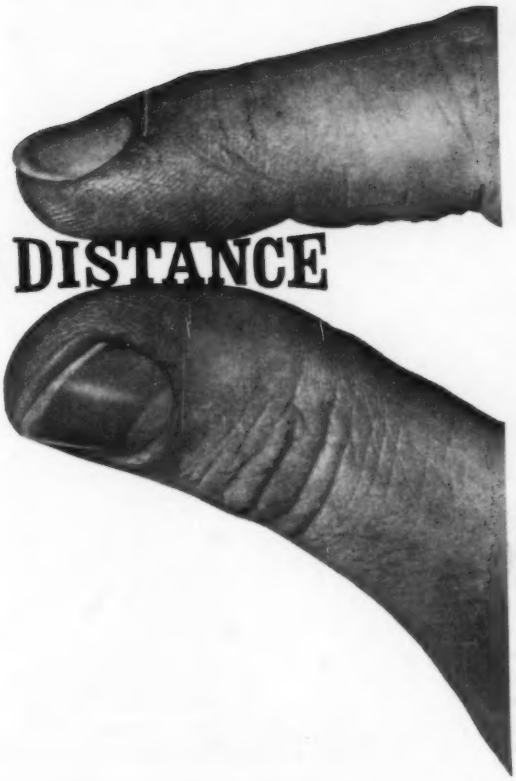

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Greetings

FROM THE PRESIDENT

ELLIOTT MORRILL
President

Your 40th Anniversary Convention

THE Buffalo Convention will be an historic milestone for AATCC. Of the group which organized the Association in 1921, 47 Charter Members are on the membership rolls. The occasion of this anniversary will give us an opportunity to pay our respects to our founding fathers. I hope you will all join us to honor them.

This will be a convention everyone should attend. It will bring together members and friends both from the United States and Canada and from other countries, and will feature a theme of international cooperation for progress in textile technology.

Our hosts have arranged an outstanding technical program, an informative exhibit, and an attractive series of social events. For second honeymooners, Niagara Falls is but a step from Buffalo!

The Niagara Frontier Section and our members in the Ontario Section of the Canadian Association of Textile Colourists and Chemists are to be congratulated on the excellent arrangements they have made to receive us. This is the first AATCC convention to be held in Buffalo, a city and surroundings which offer much that is new and interesting as a Convention site for our Association.

Be sure to come. Bring your family. You will be glad you were in Buffalo, September 27-29, 1961.

ELLIOTT MORRILL
President, AATCC

Greetings

FROM THE VICE PRESIDENTS

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Vice President
New England Region

WILLIAM S SOLLENBERGER
Vice President
Central Atlantic Region

A HENRY GAEDE
Vice President
Southern Region

JOSEPH H JONES
Vice President
Western Region

NEW ENGLAND REGION

THE Convention this year will be held in Buffalo, New York. The Committee has prepared an excellent program for both men and ladies. It is believed that this Convention will be an outstanding event in the development and progress of our Association. The city of Buffalo and the surrounding area played an important part in the early development of the United States. It is located almost equidistant from Chicago, New York and Boston. The favorable location with respect to lake transportation and the Erie Canal have made the city an important link in the industrial development of the country. The public buildings, parks, educational and public institutions will provide pleasure for those who attend the Convention. The beauty of the residential areas is well known. In addition to the scientific and technical stimulation at the Convention, adequate entertainment will be available.

I wish to extend greetings from the New England Region to all members of the AATCC and urge that they attend the Convention in Buffalo, 27-29 September, 1961. We anticipate with pleasure meeting with you in Buffalo.

W GEORGE PARKS
Vice President
(New England Region)

CENTRAL ATLANTIC REGION

"INTERNATIONAL Textile Technology—Key to Progress"—a particularly descriptive theme chosen for our 1961 convention in Buffalo, New York. This location will bring our national meeting closer to our Canadian neighbors than ever before and will present an unprecedented opportunity to discuss and share our knowledge, ideas, and problems with our counterparts in the Canadian textile industry.

The Niagara Frontier Section has prepared an excellent technical program in keeping with its chosen theme. This program, in conjunction with the exhibits, and the Intersectional Technical Papers Competition will keep us abreast of the latest technological advances in our industry.

On the lighter side, Buffalo is well known for its contributions to our nation's history. Such points of interest plus the proximity to Niagara Falls present extra activities for all who attend the convention.

We of the Central Atlantic Region extend our greetings and look forward to seeing you in Buffalo.

WILLIAM S SOLLENBERGER
Vice President
(Central Atlantic Region)

SOUTHERN REGION

TO the Niagara Frontier Section, host of the 1961 National Convention, the best of fortune. The South, source of America's fabrics, will send a large representation to Buffalo, source of many of the chemicals used in producing our fabrics. We look forward to renewing acquaintances with our Canadian friends, to enjoying the scenic wonders of the area, and to participating in the business of the Convention.

"International Textile Technology—Key to Progress": a slogan to consider well. International technology and international science cutting across geographical lines, thru language and racial barriers, rising above the strife of economic and political systems, may indeed be the key to progress and to peace.

A HENRY GAEDE
Vice President
(Southern Region)

WESTERN REGION

THIS year's national convention will offer a panorama of textile technology to AATCC members. I hope that the members of the three Western sections, Mid-West, Pacific Southwest and Pacific Northwest, will make every effort to be present and take part in this important annual function of the Association.

The Convention Committee has done everything possible to make our stay in Buffalo pleasant and comfortable. The hotel selected by the Committee has excellent facilities. The Convention city is conveniently located, by automobile, rail and plane, and in a jet age, only a few hours from the most distant member. A program of unusual and interesting activities has been planned for us.

The Western Region appreciates all the Convention Committee has done to provide a convention package filled with a variety of subjects and events which will appeal to every AATCC member. We will give you all the support possible to make the '61 Convention an outstanding success.

JOSEPH H JONES
Vice President
(Western Region)

WILLIAM H LEYKING
Convention Chairman

NICHOLAS J MOHORUK
Convention Vice Chairman

FRANK A SEDITA
Mayor of Buffalo

Greetings

FROM THE CONVENTION CHAIRMAN

THE Niagara-Frontier Section welcomes you to this convention which marks the fortieth anniversary of the Association. We are proud to be your host on this noteworthy occasion, and every effort has been made to make it a success. It was thought fitting by the convention committee to invite the charter members as guests. Accordingly, an invitation has been extended to them through the Reception Committee.

The Statler-Hilton, the convention hotel, is well equipped to handle our meeting and has excellent facilities to meet all the requirements of the AATCC's activities. They have reserved over eighty percent of their rooms for our members and have placed all other accommodations at our disposal. Also, we have received the full cooperation of the Buffalo Convention Bureau, which is prepared to extend every effort to make this meeting operate efficiently and smoothly.

Little known is the fact that the Niagara Frontier Section is composed equally of Canadians and Americans, many who are also members of the Canadian Association of Textile Colourists and Chemists. With this background, the Niagara Frontier Section chose as its theme, "International Textile Technology—Key to Success". In support of this theme, the Technical Committee has prepared an excellent program with the assistance of the CATCC. As an added feature, the committee has arranged with the United States Department of the Interior to present an educational as well as highly interesting lectured demonstration on the "Hazards of Static Electricity". This spirited exhibition should be an attraction for all who attend the convention.

The other committees have worked hard in making special preparations to assure a success of this meeting, "AATCC's 40th Anniversary", and to make your stay here an enjoyable one.

We cordially invite you to attend this convention and participate in its activities.

W H LEYKING
Convention Chairman

FROM THE CONVENTION VICE CHAIRMAN

IT is with particular pleasure that I take this opportunity in welcoming members and guests to the 1961 AATCC Convention, because, prior to the formation of the Niagara Frontier Section, being a member of the AATCC since 1947 and a Canadian residing within 60 miles of our border, like many other Canadians in this Section, I found it impossible to join in any group activities due to geographical location and extreme distances. Now, we are especially pleased, as we not only have direct contact and affiliation, but also the opportunity to expand our circle of friends and associates and participate in group activities, such as Annual Conventions.

N J MOHORUK
Convention Vice Chairman

FROM THE MAYOR OF THE CONVENTION CITY

THIS is a most pleasant duty I now perform in extending the greetings of the City of Buffalo to the membership of the American Association of Textile Chemists and Colorists.

I wish to say that we feel signally honored that our city has been afforded this wonderful opportunity to host your 1961 convention.

Please accept my assurance of the complete and unqualified cooperation of the city government and all of Buffalo to the end that your visit here will be pleasant from a personal standpoint and profitable from the standpoint of furtherance of your Association's very laudable objectives.

FRANK A SEDITA
Mayor, City of Buffalo, NY

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Greetings

FROM THE CHAIRMAN, NIAGARA FRONTIER SECTION

PARTICIPATION in the 1961 AATCC National Convention at Buffalo this month will be rewarding to the individual, to management and to the industry as a whole. The Niagara Frontier Section is convinced that your participation will assist you with your specific problems, and bring you up-to-date on many aspects of the textile industry.

The excellence and variety of papers to be presented and the opportunities to discuss them will be an invaluable aid to you.

Buffalo and Niagara Falls are centers of the dyestuff and chemical industry. Information and assistance are therefore at your fingertips. Meet your friends in the industry, but more important, serve your company by availing yourself of all the technical knowledge represented by personnel gathered there and eager to help you.

The Niagara Frontier Section extends its greeting and welcome to all members and friends of the AATCC and CATCC. We are looking forward to seeing you September 27, 28 and 29 in Buffalo. We will try to make your stay second in happiness only to that which many of you undoubtedly experienced on your honeymoon visit to nearby Niagara Falls. Bring your wives for a second honeymoon!!!

ANTON M VIDITZ-WARD
Chairman
Niagara Frontier Section

FROM THE PRESIDENT, ONTARIO SECTION, CATCC

IT is with great pleasure that we of the Ontario Section of the Canadian Association of the Textile Colourists and Chemists look forward to the 1961 Convention of the American Association of Textile Chemists and Colorists in Buffalo, New York, September 27th, 28th and 29th.

In the past, members of our Association have attended the annual conventions of the AATCC in various large cities of the United States and have been intrigued with the magnificence of the affairs—the educational aspect derived from the technical papers presented—the modern progress by the exhibits displayed—the pleasant luncheons, banquets, ladies' program and planned entertainment—and the friendliness and hospitality extended to them by the well-organized committees and members of the AATCC.

Our mutual relationship with the Niagara Frontier Section has been one of which we are very proud. Many of our members take an active part in both Associations and attend the joint meetings held on both sides of the border, which provide an excellent exchange of technical information beneficial to all. The friendly cooperation existing between the two Sections proves that unity can prevail beyond borders of countries, making the theme for the 1961 convention—"International Textile Technology—Key to Progress"—a well-chosen one.

With the Niagara Frontier Section being our host at this Fortieth National Convention and with many Ontario members of the CATCC participating, we take the opportunity of extending hearty invitations to all Canadian members, their wives and friends to this affair to renew old acquaintances and establish new ones. Considering the past achievements of previous conventions, we are anticipating a large delegation from Ontario as this is a golden opportunity with the location being so close to home and certainly an occasion that should not be missed.

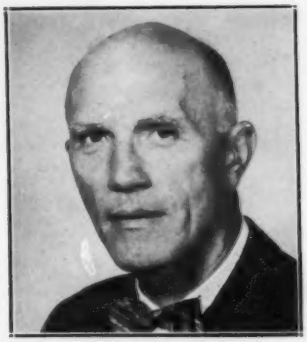
It is my privilege as president of the Ontario Section of the CATCC to have the honor of extending our sincere greetings and best wishes to the 1961 national convention chairmen and their committees for a very successful event and their untiring efforts will no doubt be rewarded by the part they took in the "FIRST" national convention held in Buffalo which will be a memorable experience.

See you at the convention.

JOHN C MANSFIELD
President
Ontario Section,
CATCC

Greetings

FROM THE RESEARCH CHAIRMEN



CHARLES A SYLVESTER
Chairman
Executive Committee on Research

GEORGE S WHAM
Chairman
Technical Committee on Research

OVER 500 AATCC members are active on the Association's Research Committees. They are AATCC's technical experts, and we expect that many of them will attend the National Convention in Buffalo.

While no Research Committee meetings are scheduled at that time, the committee members will have a chance to discuss committee problems in informal gatherings. Their presence makes it possible for the other Association members to contact these experts personally on matters concerning committee work of interest to them and to their companies. We urge you to make the most of this opportunity.

AATCC's research headquarters will be located in booths 10, 11 and 12 in the exhibit area. Recent developments in the Association's research program will be on display. The booths will also serve as a technical information center. Be sure to check in at the exhibit as you may find that you are entitled to receive a complimentary copy of AATCC's 450-page publication, "The Application of Vat Dyes."

The Convention's technical program, the Intersectional Technical Paper Competition, the exhibits and the Research Committees all combine to serve the members of AATCC through advancing the science and technology of textiles.

On behalf of the Executive Committee on Research and the Technical Committee on Research, we cordially invite you to join us in Buffalo.

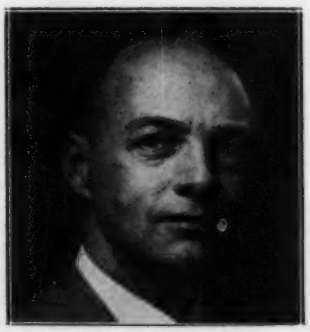
CHARLES A SYLVESTER
Chairman, Executive Committee on Research

GEORGE S WHAM
Chairman, Technical Committee on Research

FROM THE EXECUTIVE SECRETARY

YOUR National Headquarters extends a cordial invitation to all members of AATCC to attend the 1961 National Convention in Buffalo.

Those of you who bring guests can help your Section by introducing your guests to the Committee on Individual Membership. A committee member will be on hand to arrange for them to become members of AATCC. The two winning Sections in the membership competition will each receive again this year $500 from the national treasury for scholarship to be awarded to a student of their choice. The winning Sections will be announced at the banquet. The Membership Committee is counting on your help to aid your Section's and AATCC's growth.



GEORGE P PAINE
Executive Secretary

Be sure to check in at the AATCC exhibit. You may be entitled to a free 40th Anniversary copy of the Association's 450-page publication "The Application of Vat Dyes."

If your company is looking for personnel or you are looking for a company, register with the AATCC Personnel Service 8 AM to 5 PM, Wednesday through Friday, September 27-29.

A $112.00, four-volume set of the *Colour Index* will be given away as a door prize at the banquet Friday evening, September 29th.

If you register for all events, *you* may be a winner!

GEORGE P PAINE
Executive Secretary

GENERAL PROGRAM

Tuesday, September 26

7:00 pm to 9:00 pm—REGISTRATION—Mezzanine Lobby

Wednesday, September 27

8:00 am to 5:00 pm—REGISTRATION—Mezzanine Lobby
9:00 am to 6:00 pm—EXHIBITS—Statler-Hilton Exhibit Hall
10:00 am to 11:30 am—LECTURED DEMONSTRATION, "Hazards of Static Electricity", Hugh D Graham, mining, health and safety engineer, Bureau of Mines, U S Dept of the Interior—Ballroom
10:00 am to 4:00 pm—LADIES HOSPITALITY—Los Angeles Room
1:30 pm to 4:00 pm—TECHNICAL SESSION—Ballroom
8:00 pm—COUNCIL MEETING

Thursday, September 28

8:00 am to 5:00 pm—REGISTRATION—Mezzanine Lobby
9:00 am to 6:00 pm—EXHIBITS—Statler-Hilton Exhibit Hall
9:00 am to 5:00 pm—LADIES HOSPITALITY—Los Angeles Room
9:30 am to 12:00 noon—TECHNICAL SESSION—Ballroom
10:15 am to 5:00 pm—LADIES TOUR AND LUNCHEON—Niagara Falls
1:00 pm to 3:30 pm—AWARDS LUNCHEON—Terrace Room

Friday, September 29

9:00 am to 2:00 pm—REGISTRATION—Mezzanine Lobby
9:00 am to 4:00 pm—EXHIBITS—Statler-Hilton Exhibit Hall
9:00 am to 12:00 noon—LADIES HOSPITALITY—Los Angeles Room
10:00 am to 12:00 noon—INTERSECTIONAL TECHNICAL PAPER COMPETITION—Ballroom
12:30 pm—LADIES LUNCHEON—Terrace Room
1:30 pm to 4:00 pm—TECHNICAL SESSION—Ballroom
7:30 pm—BANQUET—Ballroom

TECHNICAL PROGRAM

(Abstracts of these papers begin on page 96)

Wednesday, September 27—1:30 pm to 4:00 pm

Chairman—Thomas R Foltz Jr, Lockport Felt Co

"A Carbamate Finish for Wrinkle-resistant and 'Wash-and-Wear' Cottons"—Richard L Arceneaux, J G Frick Jr, J David Reid and Gloria A Gautreaux Southern Regional Research Laboratory, USDA

"Radiation-induced Graft Polymerization of Styrene and Nylon"—Sharda DasGupta, J T Slobodian and D L Rowat, Atomic Energy of Canada, Ltd

"Application of UV Absorbers to Synthetic Fibers: Improvement in Lightfastness of Dyes on Synthetic Fibers by Ultra-Violet Absorbers"—A F Strobel, Antara Chemicals, A Division of General Aniline & Film Corp

"Wool Fabric Stabilization by Interfacial Polymerization. II. Developmental Studies of Processing Variables"—W Fong, R E Whitfield, L A Miller, and A H Brown, Western Regional Research Laboratory, USDA

Thursday, September 28—9:30 am to 12:00 noon

Chairman—James Rowatt, Harmont Color & Chemicals Co

"Path to Great Discoveries in Dyestuff Chemistry"—Walter Jenny, Ciba Ltd

"Water Conservation and Pollution Abatement"—R Hobart Souther, research consultant

"Optimum Dyeing and Finishing of Specific Polyester Blend Fabrics"—Ralph E Lacy, Victor S Salvin and Werner Schoeneberg, Celanese Fibers Co, a Division of Celanese Corp of America

"Economical Utilization of Caustic Soda in Cotton Bleacheries"—W R Steele, Solvay Process Div, Allied Chemical Corp

"A New Concept in Dyeing Synthetic and Natural Fibers and Blends in Burlington Engineering Twinpressure Becks"—Charles B Ordway, Burlington Engineering Sales Co

Thursday, September 28—2:00 pm

"A Challenge to Scientific Investigation in the Textile Industry: Ten Areas of Opportunity"—Fred Fortess, Celanese Fibers Co, a Division of Celanese Corp of America (OLNEY MEDALIST'S ADDRESS)

Friday, September 29—10:00 am to 12:00 noon

INTERSECTIONAL TECHNICAL PAPER COMPETITION———Thomas J Gillick Jr, American Felt Co, chairman; A Henry Gaede, Laurel Soap Mfg Co, presiding

"Effect of Softeners on Thermoplastic Resins"—Quebec Section, CATCC

"A Study of the Drying of Cotton Fabric and its Effect on Subsequent Dyeing and Finishing"—Rhode Island Section

"Achieving Accuracy in Measurements of Textiles for Reflectance and Whiteness"—Washington Section

Friday, September 29—1:30 pm to 4:00 pm

Chairman—Douglas Cooper, Hamilton Institute of Technology

"The Australian Commonwealth Scientific and Industrial Research Organization"—J R McPhee, CSIRO, Division of the Textile Industry

"New Developments and Experience in Continuous Dyeing of Wool by the Cibaphasol Process"—Karl Menzi, Ciba Ltd

"Import—And Your Job"—C K Black, Organic Chemicals Dept, E I duPont de Nemours & Co, Inc

"Fluorescent Whitening Agents in 'Wash-Wear' Finishing of Cotton"—Robert M Reinhardt, Terrence W Fenner, and J David Reid, Southern Regional Research Laboratory, USDA; Margaret S Furry and Mary Walsh, Clothing and Housing Research Div, USDA

EXECUTIVE COMMITTEE—1961 CONVENTION

Chairman
WILLIAM H LEYKING
Allied Chemical Corp,
National Aniline Div

Vice Chairman
NICHOLAS J MOHORUK
Hamilton Cotton Co, Ltd

Dining
ZANE S MESSINGER
Allied Chemical Corp,
National Aniline Div

Entertainment
KENNETH A LISTER
Canadian Industries, Ltd

Exhibits
FREDERIC SIEVENPIPER
Allied Chemical Corp,
National Aniline Div

Finance
SALVATORE J PULIAFICO
Allied Chemical Corp,
National Aniline Div

Hotel & Reservations
JAMES F BEST
Allied Chemical Corp,
National Aniline Div

WILLIAM K McCUSKER
Stauffer-Dobbie Mfg Co

Ladies
MISS MARGARET R HALLINAN,
chairman
Allied Chemical Corp,
National Aniline Div

MISS GRACE C FRANK
MacDonald Institute

MRS JAMES F BEST
MRS WILLIAM H LEYKING
MRS JAMES E LOUGHLIN
MRS CARL H LUDDERS
MRS ZANE S MESSINGER
MRS ANTON M VIDITZ-WARD
MRS JOHN WALLACE
MRS K A LISTER
MRS J WOLFE
MRS E P CARNEY
MRS N J MOHORUK
MRS J C MANSFIELD
MRS F J SZUREK
MRS MATTHEW J BABEY
MRS TIMOTHY J HORAN
MRS GEORGE P PAINE
MRS WM B AMOS
MRS RICHARD E RETTEW
MRS CLARENCE A SEIBERT

FREDERIC SIEVENPIPER
Exhibits

ZANE S MESSINGER
Dining

SALVATORE J PULIAFICO
Finance

WILLIAM K McCUSKER
Hotel & Reservations

KENNETH A LISTER
Entertainment

JAMES F BEST
Hotel & Reservations

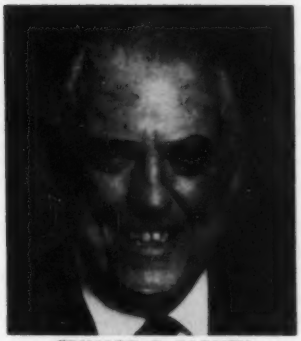
MARGARET R HALLINAN
Ladies

HOLGER S THUEMMEL
Printing

DANIEL E BOLAND
Publicity

THOMAS R FOLTZ JR
Technical Programs

JOHN WALLACE
Registration



EDWARD P CARNEY
Publicity

JAMES ROWATT
Technical Programs

Printing

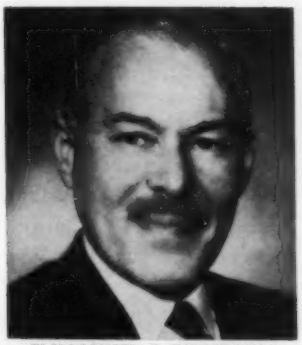
HOLGER S THUEMMEL
Allied Chemical Corp, National Aniline Div

Publicity

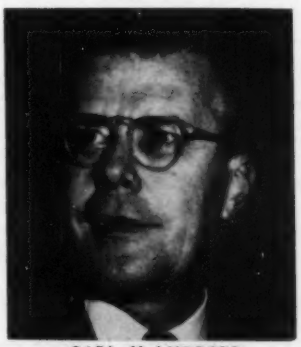
DANIEL E BOLAND
Western Electric Co
EDWARD P CARNEY
Canadian Aniline & Extract Co, Ltd

Reception

EMMANUEL I BIRNBAUM, *co-chairman*, Hart Products of Canada (Niagara-Frontier Section)
CARL H LUDDERS, *co-chairman* Allied Chemical Corp, National Aniline Div (Niagara-Frontier Section)
FRANCIS H CASEY
Sandoz Inc (Rhode Island Section)
DONALD W ROBINSON
Para-Chem Inc (Delaware Valley Section)
THOMAS H HART
Hart Products Corp (Delaware Valley Section)
ANDREW W GOODWIN
Princeton Mills (Western New England Section)
PATRICK J KENNEDY
E I duPont de Nemours & Co, Inc (Metropolitan Section)



EMMANUEL I BIRNBAUM
Reception



CARL H LUDDERS
Reception

RICHARD R RETTEW
Polymer Southern (Palmetto Section)
ACHILLES MAFILIOS
Ritter Chemical Co (Hudson-Mohawk Section)
JULIAN BERCH
Harris Research Laboratories (Washington Section)
F J CONNOLLY
Morgan Dyeing & Bleaching Co (Mid-West Section)
E R RAVENEL
Morton Salt Co (Southeastern Section)
WALKER F PRESCOTT
Prescott & Co (CATCC Quebec Section)

Registration

NEIL J BATTISTELLI
Allied Chemical Corp, National Aniline Div
JOHN WALLACE
Supersilk Hosiery Mills

Technical Programs

THOMAS R FOLTZ JR
Lockport Felt Co
JAMES ROWATT
Harmont Color & Chemicals Co

ABSTRACTS OF TECHNICAL PAPERS

J DAVID REID

SHARDA DAS GUPTA

W FONG

WEDNESDAY AFTERNOON

A Carbamate Finish for Wrinkle-resistant and "Wash-and-Wear" Cottons

RICHARD L ARCENEAUX, J G FRICK JR, J DAVID REID and GLORIA A GAUTREAUX
Southern Regional Research Laboratory

A new class of finishing agents for cotton fabrics has been found. These agents are said to be easily made from inexpensive carbamates. Preparation of typical compounds and their application to cotton fabrics will be described. The finish reportedly gives cotton good wrinkle resistance and "wash-wear" properties. It is reported to be highly resistant to chlorine damage even after many launderings. In addition, the finish is said to be very durable in comparison with other nitrogenous finishes, particularly because of its high resistance to acids and laundry "souring".

•

Radiation-Induced Graft Copolymerization of Styrene and Nylon

SHARDA DAS GUPTA, J T SLOBODIAN and D L ROWAT
Atomic Energy of Canada, Ltd

With the intention of improving certain useful properties of nylon fabrics, graft copolymers of styrene and nylon have been prepared under the influence of gamma radiation by both simultaneous and pre-irradiation techniques. The influence of many variables, such as presence of water, monomer concentration, post-irradiation soaking in monomer, oxidants, homopolymer formation and the properties of the final products have been studied. Optimum conditions for obtaining various grades of fabrics reportedly have been established.

The amount of true grafting was found to be proportional to radiation dosage over wide ranges, eg, 9.6% weight increase at 3.5×10^5 rads, 62.2% at 2×10^6 rads. Small amounts of water were found to play an important role in the grafting process. Water spray, water resistance-static head penetration and tensile tests are said to reveal considerable fabric improvement with grafts even as low as 10% weight increase; for example, warp tensile strength reportedly increased as much as 30% while filling had a 70% increase. Results of the Weather-Ometer tests will also be included.

A mechanism of reaction, involving short- and long-lived free radicals will be discussed and a structure of the grafted network proposed, based on studies using infrared spectroscopy.

•

Application of UV Absorbers to Synthetic Fibers: Improvement in Lightfastness of Dyes on Synthetic Fibers by Ultra-violet Absorbers

A F STROBEL
Process Research and Development Dept, General Aniline and Film Corp

The fastness to light of level-dyeing dyes on nylon, Dacron, and Orlon is said to be distinctly improved by co-dyeing with certain UV absorbers having appreciable absorption in the 350 to 390 mμ region. Best performance reportedly is achieved by co-dyeing the dye with absorber in the presence of a suitable carrier. The carbon arc was used in these determinations. Improvement in lightfastness of acid colors on nylon is also said to be achieved by co-dyeing with UV absorbers, although the improvement is not as great as with the level-dyeing (eg, Celliton and Genacryl) colors.

Dyeing affinity, application techniques, and wash- and lightfastness properties of the ultraviolet absorbers alone on Dacron, nylon, and Orlon have been determined.

•

Wool Fabric Stabilization by Interfacial Polymerization. II. Developmental Studies of Processing Variables

W FONG, R E WHITFIELD, L A MILLER, and A H BROWN
Western Regional Research Laboratory

Recent work at USDA's Western Regional Research Laboratory reportedly has shown that wool fabrics can be made shrink resistant through a technique based upon formation by interfacial polymerization of a thin, uniform, resin film on the fiber surface. This paper will describe detailed developmental studies aimed toward adapting this unique treatment to a practical and economic process for producing washable wool fabrics. Effects of important process variables, including reagent concentrations, solvent type, processing speed, treatment time, and padding pressures, have been defined by statistically designed experiments. Representative woven and knitted worsted and woolen fabrics have been processed and evaluated. Post-treatment finishing and dyeing procedures required for satisfactory results have been determined. Finally, preliminary trials have been made on application of the treatment to finished garments and to wool top.

THURSDAY MORNING

Path to Great Discoveries in Dyestuff Chemistry

WALTER JENNY
Ciba Ltd

The peculiarities and characteristics of chemical invention will be pointed out at the beginning. The various possibilities of making inventions and discoveries in the specialized field of dyestuff chemistry will be shown. An analysis of the great discoveries in dyestuff chemistry and the motivating forces underlying them is intended to show that coincidence and good fortune have almost always had an important part to play in their development. Furthermore, a number of examples will be given to show how, very often, a great invention may be a stroke of good fortune while pursuing a clear scientific objective. Finally, an examination will be made of what the dyestuff chemist of today can learn from the great discoveries of the past.

•

R HOBART SOUTHER

Water Conservation and Pollution Abatement

R HOBART SOUTHER
Greensboro, NC

In this second industrial revolutionary age, industry everywhere recognizes the importance of water conservation and the problems which must be solved if we are to have enough clean water to meet the essential needs of life. The textile industry is said to be contributing more and more research to solving the problems of pollution abatement and fulfilling its obligation to The National Credo promulgated at the National Conference on Water Pollution, by conserving water, using it and returning it to stream in good condition for other legitimate users.

The need for further research in treatment of industrial waste is well known, but finding even the best approach to a solution of the problem is sometimes difficult.

The AATCC Committee on Stream Sanitation cooperates very effectively with the USPHS National Technical Task Committee on Industrial Waste in providing information on conventional as well as more modern concepts of industrial waste treatment. The waste guides to the wool, laundry and cotton textile industries, available through the AATCC Stream Sanitation Committee, describe the various conventional methods and approaches to research on new methods of waste treatment.

Experimental research data on the new prolonged bioaeration process, developed for Haw River, North Carolina and adapted for textile waste treatment by Aileen, Burlington, Cone, Canton, and Chicopee plants reportedly indicate many varied textile wastes can be treated very satisfactorily, efficiently and economically by this method. Construction and maintenance costs on the new bioaeration or aerobic process are said to range about 1/6 to 1/2 that of conventional trickling filter and activated sludge or combined processes. Starch desizing wastes reportedly can be treated in plant with construction cost less than $25 per lb of BOD per day, compared with cost at $100 per lb BOD per day in conventional plant. Anaerobic digestion of starch desizing waste is said to be more expensive and usually effluent requires additional treatment. Experimental data thus far reportedly indicates starch desizing waste may be satisfactorily loaded into plant designed for bioaeration treatment of finishing and dye wastes without increasing the plant size or treatment costs over starch substitutes.

Other highlights will show how the AATCC Committee on Stream Sanitation serves the textile industry in disseminating information to sponsoring research to help it meet its obligations and develop best possible public relations.

•

OPTIMUM DYEING AND FINISHING OF SPECIFIC POLYESTER BLEND FABRICS

RALPH E LACY, VICTOR S SALVIN and WERNER A SCHOENEBERG
Celanese Fibers Co

RALPH E LACY

VICTOR S SALVIN

WERNER A SHOENEBERG

The versatility of the polyester fiber, based on polyethylene glycol terephthalate, has led to the creation of a wide variety of new and unique fabrics of improved end-use performance. Selected fabrics, consisting of blends of Fortrel polyester fiber with cotton or wool, are used to illustrate dyeing and finishing procedures aimed at optimum colorfastness, serviceability, and aesthetic properties.

Optimum balanced colorfastness can only be achieved by critical selection of disperse dyes. This is especially illustrated where yarn dyeing of polyester and cotton blends must have adequate sublimation-resistance properties where heat treatment or resin curing is required

in the yarn-dyed fabrics containing white areas.

In polyester blends with wool, reduced staining of the wool by disperse dyes requires careful selection of dyestuff structure, and the use of effective detergents in the dyebath as well as for the afterscour.

Improved procedures for mechanically finishing polyester/wool blends in soft textured fabrics can significantly improve the pilling resistance of these fabrics. Particular emphasis must be placed on shearing and singeing of the fabrics prior to fulling or milling.

Unusual hands and aesthetic appeal can be imparted to polyester/cotton blended fabrics through a combination of alkali treatment, embossing or hot calendering, and choice of selected crosslinking reactants.

•

ECONOMICAL UTILIZATION OF CAUSTIC SODA IN COTTON BLEACHERIES

W R STEELE
Solvay Process Div,
Allied Chemical Corp

In many cotton bleacheries, a major portion of the purchased caustic soda is still wasted. If the caustic content of the used liquor is not too low, it can be evaporated, purified, and reused, thereby reducing costs and alleviating stream pollution.

A caustic utilization survey should first be made. The technique has been evolved over a period of years by Solvay. Each caustic-consuming operation is analyzed to determine respectively the quantity of caustic consumed, available for recovery, recovered, reused, and wasted. The survey report includes a complete cost evaluation.

Solvay has developed procedures for increasing the quantity and concentration of the recovered liquor to permit reusage of the maximum amount "as is" to minimize evaporation and purification costs. Impurities are concentrated during evaporation and therefore filtration is usually necessary. In some cases, dialysis may be required to reduce soluble impurity content. Solvay has developed a suitable dialytic process and equipment for performing it.

Recovery and reutilization of caustic soda usually reduces the causticity of bleachery waste, but sometimes not enough. Solvay has also developed a patented flue gas process for reducing both causticity and BOD.

While economical utilization of caustic soda may involve recovery, evaporation, filtration, dialysis, and flue gas treatment of the final waste, the annual return on investment commonly exceeds fifty percent. To date, approximately 70 caustic surveys have been made by Solvay.

•

A NEW CONCEPT IN DYEING SYNTHETIC AND NATURAL FIBERS AND BLENDS IN BURLINGTON ENGINEERING TWIN PRESSURE BECKS

CHARLES B ORDWAY
Burlington Engineering Sales Co

Burlington Engineering Company, over the past two and one half years, reportedly has developed a new concept in the dyeing of synthetic and natural fibers and blends in its twin pressure becks (high- and low-pressure).

The high-pressure becks are said to operate at 20 pounds pressure and temperatures up to 250°F, while the low-pressure becks operate at 28 ounces of pressure and temperatures up to 218°F.

Over the past year, these twin pressure becks have been operating on regular plant production on a wide range of fabrics, as noted, since the 'bugs' have been eliminated and newer fabric constructions are constantly being added for production operation.

The synthetic and natural fibers and blends cover a wide range of fabrics now being processed on standard types of enclosed dye becks at atmospheric (205-210°F) temperatures, whereas the pressurization of becks is said to give these advantages on dyeing operations:—

1) All elements of dyeing process uniform and under control in all parts of these pressure becks.
2) Improves colorfastness and clearness of dyed shade.
3) Improves levelness and penetration of dyed fabrics.
4) Increases range of fabric constructions possible to dye in 'rope' form.
5) Reduction in time of dyeing cycle, creates savings.
6) Reduction in dyestuff and chemical carriers.
7) Reduction in 'reworks' and 'seconds' as well as salvaging off-quality dye lots due to streaks, cracks and blotches.

The advantages said to be gained from heavy sealed constructed pressure beck on plant operation are:

1) Greater ratio of formulas dupplication over standard enclosed-type becks.
2) Longer life of dyebecks and reduced maintenance costs.
3) Load capacity, floor space and electric power requirements similar to standard enclosed becks of comparable rated capacity.
4) Special protection devices for protection of operator (high importance).
5) Steam consumption reduced considerably.
6) Water consumption reduced. (All cooling water reclaimed).
7) The sealed pressure beck helps to contain vapors and fumes:
   a) increasing ranges of usable chemicals and dyes,
   b) reducing initial building costs and operating expense; and
   c) helping to eliminate corrosion on ventilating and auxiliary equipment.
8) These pressure becks may be insulated, which would improve working conditions for operatives and fellow workers plus other operating costs.

CHARLES B ORDWAY

THURSDAY AFTERNOON

(OLNEY MEDALIST'S ADDRESS)

A CHALLENGE TO SCIENTIFIC INVESTIGATION IN THE TEXTILE INDUSTRY: TEN AREAS OF OPPORTUNITY

FRED FORTESS
Celanese Fibers Company
A Division of Celanese Corp of America

(*See page 121*)

FRIDAY MORNING

1961 Intersectional Technical Paper Competition

(*See pages 100-4*)

FRIDAY AFTERNOON

THE AUSTRALIAN COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

J R McPHEE
Division of Textile Industry, CSIRO

The Australian CSIRO is a government-sponsored organization consisting of some 30 divisions and sections. Laboratories have been established in different parts of the country, wherever facilities, contacts and other conditions are best suited for the particular type of work carried out. Total staff is just over 4,000, of whom about 2,500 are directly engaged on scientific work.

The research programs vary from fundamental chemistry, physics, mathematics and biology to industrial technology of direct importance to Australia's growing secondary industries. Much attention is given to the breeding, physiology and nutrition of animals, especially cattle and sheep, and to all aspects of the primary industries.

Some of the more spectacular results of great benefit to the Australian economy include the addition of trace elements to soils to convert millions of unproductive acres in medium rainfall areas into excellent pastures, the introduction of myxomatosis, which decimated a huge wild rabbit population, estimated in 1949 to be eating as much feed as 70 million sheep, and the discovery of effective, cheap methods of purifying crude ore extracts rich in the rare metals for space-age technology.

CSIRO's work covers almost every phase of industries concerning plants (eg, introduction of new plants, control of plant diseases, mechanisms of fertilizing, extraction of chemicals potentially useful as drugs, studies on fruits and vegetables), animals (eg, drought feeding, blowfly strike, disease, insect pests, preservation and transport of meat) and other primary products, such as timber and dairy produce.

The wool industry, which earns more than half of Australia's export income, is studied in every aspect, starting with plant and soil improvement and pasture protection, moving through the problems of increasing the lamb-marking percentage, yield of wool per sheep and decreasing the mortality rate, to finally reach wool textile research.

The Wool Textile Research Laboratories investigate the basic protein chemistry and physics of wool keratin, as well as all features of processing. Many results have found immediate application in the Australian industry and are now being accepted in other countries. Examples of these are the introduction of scourable branding fluids, a solvent-degreasing process for cleaning raw wool, improvement of card performance, automatic control of Noble combing, mothproofing with Dieldrin, shrinkproofing with permanganate in saturated brine, and the sterilizing of institutional blankets by boiling. Work on setting mechanisms defined the roles of water and heat in the rapid permanent setting of wool with reducing agents and led to the SiRoSet process for the permanent creasing and pleating of wool fabrics. Further adaption of the setting technique allows wool cloth to be flat-set very simply, and by combination of flat setting with a shrinkproofing process, washable, noniron all-wool fabrics are now being produced industrially.

•

New Developments and Experience in Continuous Dyeing of Wool by the Cibaphasol Process

KARL MENZI
Ciba Ltd

Some physical phenomena of the continuous dyeing of wool by the coacervation principle will be explained with the aid of photomicrographs and movie-films. The possibilities and limits of the formation of the two-phase system will be dealt with in particular. A special chapter will be devoted to the processes taking place during the steaming operation, ie, the fixing mechanism.

As a result of the laboratory and bulk working trials carried out so far, some possibilities of application with regard to suitable equipment for Ciba's Cibaphasol dyeing process will be discussed. The economy of the Cibaphasol process will also be explained by means of examples of different dyestuff groups in comparison with conventional methods.

IMPORTS—AND YOUR JOB

C K BLACK
Organic Chemicals Dept,
E I du Pont de Nemours & Co, Inc

The history of United States tariffs shows their effectiveness over the years in assisting the textile and supplying industries. The history of world trade shows the complexity of international problems that now exist. Our present relationships with other countries as involved in the Trade Agreements Act and the General Agreement on Tariffs and Trade (GATT) will be discussed.

Charts showing the rapid rise of imports from low-wage countries will be presented. Wage comparisons with other countries will depict the tremendous handicap under which we must compete.

Current problems, such as unemployment, loss of world markets, loss of domestic markets, gold outflow and defense aspects will be considered in the light of the present political situation.

Various solutions to these problems are proposed, the most plausible being the maintenance of adequate tariff protection or the imposition of quotas.

•

Fluorescent Whitening Agents in "Wash-Wear" Finishing of Cotton

ROBERT M REINHARDT, TERRENCE W FENNER, J DAVID REID
Southern Regional Research Laboratory
and
MARGARET S FURRY, MARY WALSH
Clothing and Housing Research Division

The use of fluorescent whitening agents in the "wash-wear" finishing of cotton fabrics has been investigated. Three processing techniques for applying the whitener were used. Applications prior to the crosslinking treatment, after the crosslinking treatment, and with the crosslinking agent in the same pad bath were studied. Eight fluorescent whitening agents and two crosslinking agents were included in the work.

Color measurements indicating the whitening effects produced in the fabric by the different finishing treatments were made with ultraviolet radiation either included or excluded. Durability of these whitening effects to various types of laundering was determined. Any changes in the fabric's resistance to wrinkling and susceptibility to chlorine and light damage due to the treatments also were noted.

1961 AATCC INTERSECTIONAL TECHNICAL PAPER COMPETITION

THIS year's Intersectional Technical Paper Competition, known in previous years at the Intersectional Contest, will be held Friday morning, September 29, from 10:00 to 12:00 noon in the Ballroom of the Statler-Hilton Hotel, Buffalo, NY, with A Henry Gaede presiding.

Two AATCC Sections, Rhode Island and Washington, will be competing. In addition, a special invitation paper will be presented by Frank Magnussen of the Quebec Section, on behalf of the Canadian Association of Textile Colourists and Chemists. Only the papers of the Rhode Island and Washington Sections will be judged in accordance with the newly established rules of the Intersectional Technical Paper Competition [cf *Am Dyestuff Reptr* 50, No. 7, 44-7 (April 3, 1960)].

The Rhode Island Section maintains a commanding lead in the number of cumulative points attained since the inception of the Contest. Assigning values of 5, 3 and 2 for the first, second and third places respectively (the same ratio in which prize money is awarded), the cumulative standing is as follows:

Rhode Island—51, Delaware Valley—40, Piedmont—40, Metropolitan—36, Northern New England—28, Washington—8, Southeastern—7

The record of winners, since the contest was inaugurated in 1940, is as follows:

1940—1st, RI; 2nd, SE; 3rd, DV
1941—1st, Met; 2nd, DV; 3rd, SE
1942—1st, Met; 2nd, NNE; 3rd, DV
1943—1st, DV; 2nd, NNE; 3rd, Met
1944—1st, RI; 2nd, NNE; 3rd, Met
1945—1st, RI; 2nd, NNE; 3rd, Met
1946—1st, Met; 2nd, DV; 3rd, RI
1947—1st, NNE; 2nd, DV; 3rd, Met
1948—1st, Pied; 2nd, NNE; 3rd, DV
1949—1st, RI; 2nd, NNE; 3rd, Pied
1950—1st, Pied; 2nd, RI; 3rd, DV
1951—1st, Met; 2nd, RI: 3rd, DV
1952—1st, RI; 2nd, DV; 3rd, Met
1953—1st, RI; 2nd, Met; 3rd, DV
1954—1st, Wash; 2nd, Pied; 3rd, RI
1955—1st, RI; 2nd, DV, 3rd, Pied
1956—1st, Pied; 2nd, Wash; 3rd, RI
1957—1st, Pied; 2nd, Met; 3rd, SE
1958—1st, Pied; 2nd, DV; 3rd, RI
1959—1st, NNE; 2nd, Pied, 3rd, DV
1960—1st, Pied; 2nd, DV, 3rd, RI

A glance at the above shows that the Rhode Island Section, in addition to leading in points, also leads in the number of first place awards, having won 7 times. Following in order is the Piedmont Section with 6, the Metropolitan Section with 4, Northern New England with 2, and Delaware Valley and Washington with 1 each. The Delaware Valley Section leads with 7 second-place awards followed by Northern New England with 5; Rhode Island, Metropolitan, and Piedmont with 2; and Southeastern and Washington with 1 each. In third place awards, the Delaware Valley Section leads with 7, followed by Metropolitan and Rhode Island with 5, and Piedmont and Southeastern with two. The details of this year's competition follow.

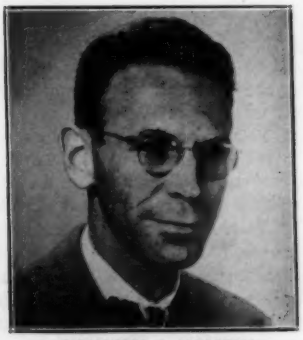
ANNUAL INTERSECTIONAL TECHNICAL PAPER COMPETITION COMMITTEE

THOMAS J GILLICK JR
Chairman

THOMAS J GILLICK, *chairman*
ROLAND E DERBY JR
A HENRY GAEDE
KENNETH A HOWRY
LEE G JOHNSTON
ALBERT H RANT

ALBERT H RANT

ROLAND E DERBY JR

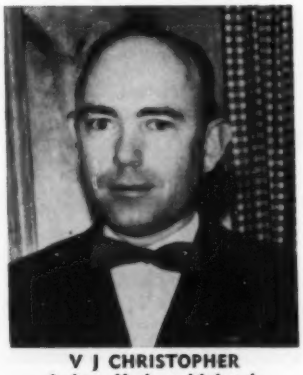


KENNETH A HOWRY

LEE G JOHNSTON

EMANUEL N SARANTIS
Judge, Delaware Valley

ALLEN J ROONEY
Judge, Hudson-Mohawk



V J CHRISTOPHER
Judge, Hudson-Mohawk

ARMAND DI MEO
Judge, Hudson-Mohawk

CHIEF JUSTICE

ALBERT H RANT
Laurel Soap Mfg Co

JUDGES AND ALTERNATES REPRESENTING SECTIONS

Delaware Valley Section

EMANUEL N SARANTIS
E I duPont de Nemours & Co, Inc
F J DeMARIA
Para-Chem, Inc
SAMUEL H LOPER JR
E I duPont de Nemours & Co, Inc

Hudson-Mohawk Section

ALLEN J ROONEY
Geigy Dyestuffs
Geigy Chemical Corp
V J CHRISTOPHER
Mohasco Industries, Inc
ARMAND DI MEO
Rebel Dyeing Corp

Metropolitan Section

FRED FORDEMWALT
American Cyanamid Co
JOHN A KOMNINOS
Waldrich Co
JOHN F WARNER
Fuller Fabrics Div
J P Stevens & Co, Inc

Mid-West

ERNEST LARRAT
Rohm & Haas Co
JACK G KELLEY
E I duPont de Nemours & Co, Inc
JAMES L McGOWAN
Morgan Dye & Bleaching Co

Niagara Frontier Section

JAMES E LOUGHLIN
National Aniline Div
Allied Chemical Corp

Northern New England

BENNETT S GESMER
Dyecraftsmen, Inc

Northern Piedmont

J W WEAVER
Research Div, Cone Mills Corp

JOHN A KOMNINOS
Judge, Metropolitan

BENNETT S GESMER
Judge, Northern New England

LINTON C REYNOLDS
Judge, Palmetto

JACK G KELLEY
Judge, Mid-West

HERMAN P BAUMANN
Judge, Piedmont

JOSEPH W MacNEIL
Alternate Judge, Rhode Island

DONALD A CAMPBELL
Alternate Judge, Rhode Island

A J KELLY
Judge, South Central

Palmetto

LINTON C REYNOLDS
Riegel Textile Corp
LEWIS T KELLY
Research & Dev Labs
Lyman Printing & Fin Co
STUART M THOMSON
Ware Shoals Div
Riegel Textile Corp

Piedmont

HERMAN P BAUMANN
Koppers Company

Rhode Island

FRANK J LACHUT
Owens-Corning Fiberglas Corp
JOSEPH W MacNEIL
Althouse Chemical Co
DONALD A CAMPBELL
C H Masland & Sons

South Central

ANDREW J KELLY
Burkart Schier Chem Co

Southeastern

ROBERT B VAN TASSEL
The Jefferson Mills, Inc
CARL R BLUMENSTEIN
Seydel-Woolley & Co
GEORGE H DOCKRAY
Textile Industries

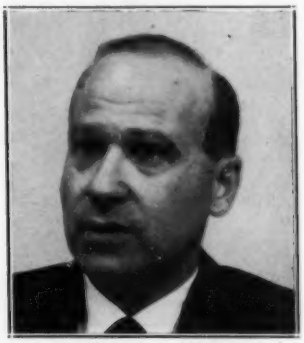
Washington

NELSON F GETCHELL
National Cotton Council of America
ARNOLD W SOOKNE
Harris Research Labs
LOUIS R MIZELL
Harris Research Labs

Western New England

PAUL W REEVES
Princeton Knitting Div
Burlington Industries
ARTHUR R MERRITT JR
WITOLD R KOCAY
Res Dept, Fibers Div
American Cyanamid Co

NELSON F GETCHELL
Judge, Washington



ARNOLD M SOOKNE
Judge, Washington

LOUIS R MIZELL
Judge, Washington

SECTIONAL COMMITTEES

Rhode Island

WILLIAM J CRAWFORD, *cochairman*
Cranston Print Works Co
W S BARNES, *cochairman*
Original Bradford Soap Works
HERMAN B GOLDSTEIN, *speaker*
Warwick Chemical Co Div
Sun Chemical Corp

TERRY H TRIMMER, *secretary*
Original Bradford Soap Works
JOHN J ROARKE
W J COONEY
D C HARDMAN
GEORGE DOBSON
FERNAND SCHLAEPPI
J J DILLON
ALBERIC T DI MASI
JOHN DERRIG

DON HALPERN
BERNARD A HESLIN
ERLING OWREN
MARVIN H ROWE
JAMES A COONEY
ERNEST YEADON
H F WEIDMAN
WILLIAM B ALDRICH
WILLIAM H CADY
EDWARD W RODA

WILLIAM J CRAWFORD
Cochairman, Rhode Island

W S BARNES
Cochairman, Rhode Island

Washington Section

RICHARD S HUNTER, *chairman & speaker*
Hunter Associates Laboratory, Inc

MARY B SPICER
Hunter Associates Laboratory, Inc

LYMAN FOURT
Harris Research Laboratories

GRAND EDWARDS
Harris Research Laboratories

MARGARET S FURRY
U S Dept Agriculture, Textile & Clothing Section

KATHERINE TAUBE
U S Dept Agriculture, Textile & Clothing Section

NED HOPPER
National Institute of Rug Cleaning

FRED LOIBL
National Institute of Drycleaning

WERNER PELS
National Cotton Council

ISADORE NIMEROFF
National Bureau of Standards

Quebec Section, CATCC

FRANK MAGNUSSEN, *speaker*
Canadian Celanese Ltd

HERMAN B GOLDSTEIN
Speaker, Rhode Island

RICHARD S HUNTER
Chairman-speaker, Washington

ABSTRACTS OF INTERSECTIONAL TECHNICAL PAPERS

A STUDY OF THE DRYING OF COTTON FABRIC AND ITS EFFECT ON SUBSEQUENT DYEING AND FINISHING

RHODE ISLAND SECTION

There have been many reports on laboratory investigations concerning heat effects on cellulose, but these have not been related to fabrics in practical plant operations.

Drying methods and equipment at all stages in cotton finishing plants are highly varied both from plant to plant, and also, in relationship to the amount of drying which fabrics of different weights receive within an individual plant.

This paper is a study of the variables in drying by common plant practices and their effect on the subsequent dyeing and finishing. It was found that better control of drying will improve dyeing and finishing results.

ACHIEVING ACCURACY IN MEASUREMENTS OF TEXTILES FOR REFLECTANCE AND WHITENESS

WASHINGTON SECTION

Before measurements of whiteness and bleaching progress become standard in the textile industry, it will be necessary to assure that different laboratories and different instruments used for these measurements are able to agree. The study undertaken by the Washington Intersectional Technical Committee has sought the answers to three questions:

1) How well do different instruments agree in measurements of reflectance and whiteness?

2) To what extent are spectral and photometric differences between these instruments the causes of disparities in results?

3) What precautions and techniques in specimen preparation and handling are needed to attain repeatable whiteness and reflectance values?

The Committee has compared results from 13 different instruments in the Washington area. Six different types of instruments were used for the study in eight different laboratories. A special series of permanent ceramic standards was used to identify spectral and photometric errors in instruments. Carefully standardized procedures for handling specimens were designed to enable workers in different laboratories to obtain accurate results in agreement with each other.

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EFFECT OF SOFTENERS ON THERMOPLASTIC RESINS

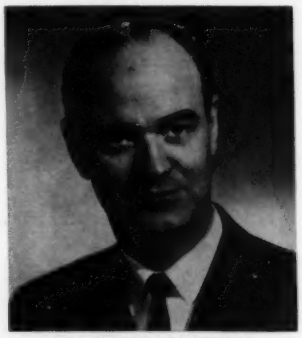
QUEBEC SECTION, CATCC

This paper will deal with finishing

experiments carried out on acetate fabrics using different thermoplastic resins in combination with anionic, nonionic and cationic softeners.

The physical properties of resin/softener combination at different concentration levels have been investigated and the results which have been recorded graphically indicate trends in sewability, stiffness, abrasion and tear strength.

Particular attention has been paid to illustrate which of the components, softener or resin, governs the change in physical characteristics. For instance, four resins combined with an ethylene oxide condensate and a fatty carbamide at various concentrations were tested for abrasion. The results revealed that the abrasion depends on the softener and not the thermoplastic resin. Similar charts will be shown for tear and sewability tests.



FRANK MAGNUSSEN
Speaker, Quebec Section, CATCC

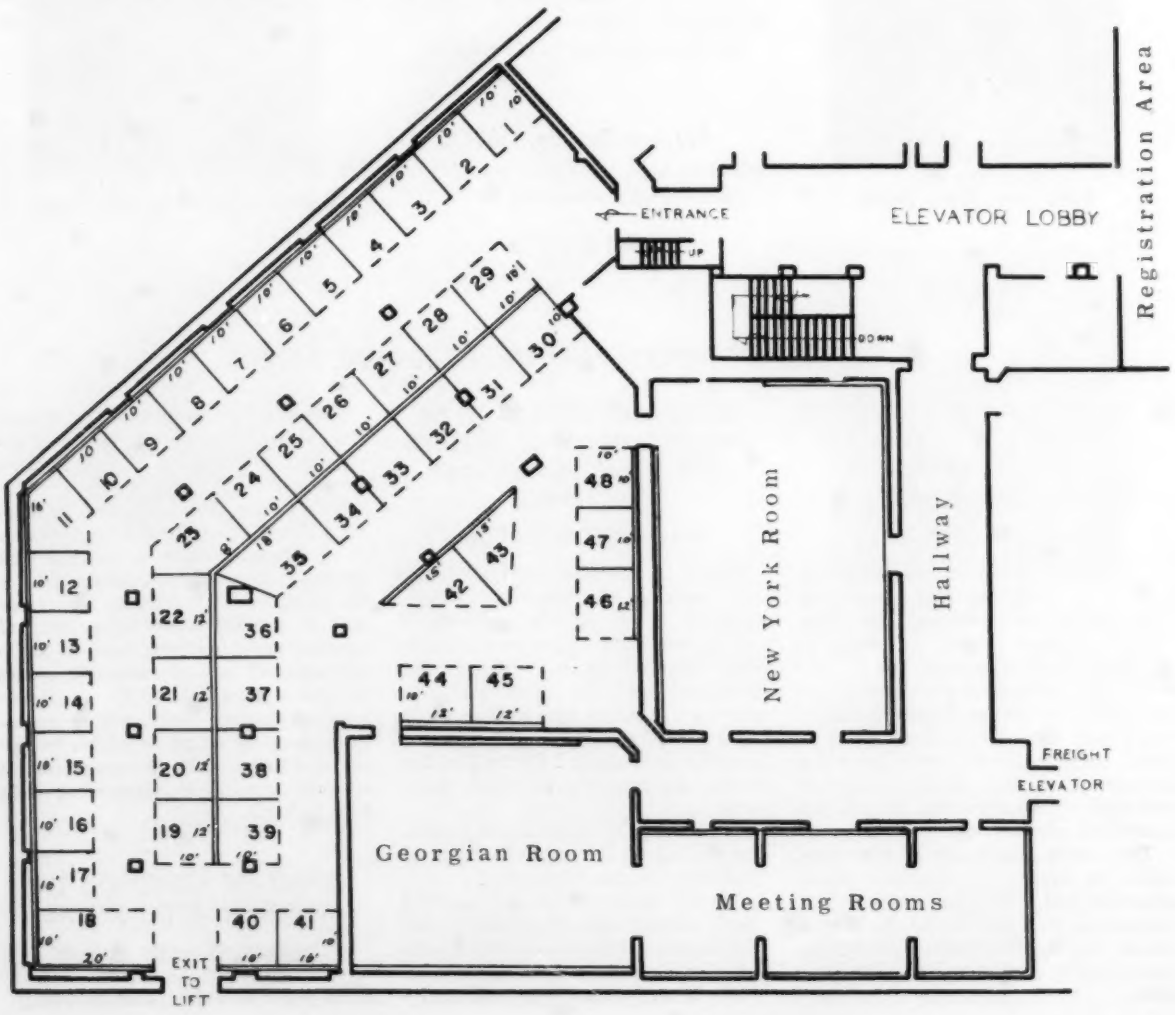
A detailed description of the test methods used will be discussed and the film characteristics of resin/softener combinations outlined.

The conclusion reached is that many fabric properties can be improved by correct choice of softener and thermoplastic resin.

EXHIBITS

EXHIBITS will be shown in the Statler-Hilton Exhibit Hall on the mezzanine floor during each of the three days of the Convention. Show hours will be Wednesday, Sept 27—9 am to 6 pm; Thursday, Sept 28— 9 am to 6 pm; Friday, Sept 29—9 am to 4 pm.

A map of the exhibition area and individual exhibit descriptions follow.



ALLIED RESEARCH ASSOCIATES, INC

43 Leon St
Boston 15, Mass
Booth 25

On display: A laboratory display model of the Green-Bartlett high-speed colorimeter set up to measure color variations on cloth samples. This colorimeter is designed to be used in two different machines for the textile industry, namely 1) *quill shader* . . . color sorts colored filling bobbins (quills) by difference in shade, and 2) *moving cloth color monitor* . . . this equipment monitors color variations across the width and along the length of continuously moving cloth as it comes out of the dye range.

In attendance: Alfred R Seville, manager, Industrial Products Dept; Gerald Cooper, principal engineer.

AGRICULTURAL RESEARCH SERVICE, USDA

PO Box 19687
New Orleans, La
Booth 22

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

P O Box 28
Lowell, Mass
Booths 10-11-12

Information center on AATCC technical activities, publications and Association affairs. Research committee displays.

In attendance: George J Mandikos, technical secretary; research committee members.

AMERICAN SOCIETY FOR TESTING MATERIALS

1916 Race St
Philadelphia 3, Pa
Booth 24

ATLAS ELECTRIC DEVICES CO

4114 North Ravenswood Ave
Chicago 13, Ill
Booth 18

On display: Latest model Launder-Ometer, scorch testers, Accelerotor, pilling tester, crockmeters and perspiration tester.

In attendance: John W Lane, president; J E Norton, vice president; William Lane, engineer; M J Babey, sales representative.

ARTHUR H THOMAS CO

Vine St at 3rd (PO Box 779)
Philadelphia 5, Pa
Booth 14

On display: Thomas-Karl Fischer titration apparatus, new dead-stop model; Thomas-Stormer viscosimeter, special outfit for vat printing pastes in the textile industry; Stone titrator; Beckman Model DB spectrophotometer; Bausch & Lomb Spectronic color analyzer with reflectance attachment; Turner fluorometer, Model 111; Photovolt Linear/Log recorder; B & L DynaZoom microscope, etc.

In attendance: John A Morrow, Harry B Balthaser Jr and Robert E Howe, technical representatives.

BECCO CHEMICAL DIVISION FMC Corp

161 East 42nd St
New York 17, NY
Booth 3

Exhibit will describe hydrogen peroxide applications for bleaching in the textile industry.

In attendance: D H Nelson, division manager; A P Shutts, sales manager; J R Hopkins, assistant sales manager; J F Whalen, southern manager; F X Nerney, southeastern manager; E M Roth, upper New York manager; M A Noonan, New York-Philadelphia manager; F A Kraft, New England manager; B K Easton, manager, Textile Applications Section, FMC Research and Development Dept; E J Elliot, technical service, FMC Research and Development Dept.

BIRCH BROTHERS INC

32 Kent St
Somerville 43, Mass
Booth 28

On display: Two-roll laboratory Minipad, 25-gallon vacuum color strainer, pocket yarn balance, and literature on other Birch laboratory processing equipment.

In attendance: Clifford W Birch Jr, president; Vernon R Crosby, east coast representative; Herb Anderson, Canadian representative.

BURLINGTON ENGINEERING SALES CO, INC

Graham, NC
Booth 21

On display: Sample Burlington Dyeing Machine, Model TCT-618; enlarged photographs of the Hy-Pressure Dye Beck, which reportedly can be operated at 20 psi and 250°F, and Lo-Pressure Dye Beck, which has limits of 28 ozs per square inch and 218°F. Both the Hy-Pressure and Lo-Pressure Dye Becks are thought to be major breakthroughs in the dyeing field, especially in polyesters and other man-made fibers.

In attendance: J Saunders Williamson, president; C B Ordway, Technical Dept; Thomas E Davis, chief engineer; Rodney E Taylor, sales engineer.

CANADIAN TEXTILE JOURNAL

223 Victoria Ave
Westmount, Montreal 6, Canada
Booth 36

Textile publication.

CANISIUS COLLEGE

2001 Main St
Buffalo, NY
Booth 30

Educational display.

THE CHEMSTRAND CORP

Decatur, Ala
Booths 7 and 8

CUSTOM SCIENTIFIC INSTRUMENTS, INC

541-543 Devon St
Kearny, NJ
Booth 37

On display: Accelerated soil tester, American Cyanamid Rol'er pressure crease tester, custom tension recordograph, CSI flex tester, pilling tester, electrical resistance tester, electrostatic voltmeter.

In attendance: H J Bultman Jr.

DAILY NEWS RECORD

7 East 12th St
New York 3, NY
Booth 5

Textile publication.

DAVIDSON AND HEMMENDINGER

2857 Nazareth Rd
Easton, Pa
Booth 29

On display: Two analog computers, the Colorant Mixture Computer (COMIC) and the Tristimulus Difference Computer (TDC), a new accessory to the COMIC. The COMIC, which is designed for shade matches and production control, reportedly will increase production, reduce costs, improve quality, simplify formulas, and eliminate metamerism by forcing the operator, if at all possible, to obtain a spectrophotometric match. The TDC reportedly may be used in color-formulation problems where exact spectral, or nonmetameric, match cannot be made, and in formula correction where tristimulus specifications alone are inadequate.

In attendance: Hugh R Davidson, partner; Richard Landry, sales manager; Marie Landry, demonstrator.

DIAMOND CRYSTAL SALT CO

St Clair, Mich
Booth 6

On display: Various types of salt, both high-grade evaporated as well as pure Louisiana rock salt. Technical literature pertaining to these products will be available.

In attendance: L R Strong, technical director; J A Selbee, regional manager, Charlotte, NC; D D Downing, assistant manager, industrial sales.

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FISHER SCIENTIFIC CO

717 Forbes Ave
Pittsburgh 19, Pa
Booth 27

On display: Mettler yarn balance, reflectance spectrophotometers, and stereoscopic microscopes.

In attendance: John Cramer, sales manager; Herb Clayton, technical representative; Bob Kress and Al Szanto, technical specialists.

•

GASTON COUNTY DYEING MACHINE CO

Stanley, NC
Booth 9

On display: Stainless-steel Model 101 sample-dyeing machine, which will dye 12 sample skeins, tapes, cloth swatches or raw-stock units at conventional or high temperatures. Model 101 is mounted within a stainless-steel cabinet.

In attendance: Gordon Hacker, vice president & general manager; A R Breen and A P March, sales representatives; Walter J Newcomb, sales engineer.

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GENERAL ANILINE & FILM CORP
The Chemical Group

435 Hudson St
New York 14, NY
Booths 34 and 35

Exhibit will feature GAF's dyes for synthetic fibers, Blancophor brighteners, and Gafac surfactants used in drycleaning.

In attendance: J W Conlon, general manager, General Dyestuff Co Division; H A Webb, director of marketing, General Dyestuff Co Division, O Habel, general product line manager, dyestuffs; H K Schweighofer, product manager, azo condensation dyes; J T Atwood, product manager, vat and sulfur dyes; P J Choquette, product manager, azoic dyes; R J Holmes, product manager, Blancophor products; L Fusser, technical manager, dyestuffs; T Walsh, E Taylor, and K Prytherch, product line engineers, dyestuffs; H A Horstmann, branch manager, New York/Philadelphia; L Thompson, manager of special projects, dyestuffs; G A Sharpe, salesman, dyestuffs.

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HEADQUARTERS—QUARTERMASTER RESEARCH & ENGINEERING COMMAND, U S ARMY

Quartermaster Research & Engineering Center
Natick, Mass
Booth 48

This exhibit will provide information on the method of controlling shade for uniforms for the U S Army and detailed information regarding specifications and test procedures used. Also a display will be made of the Quartermaster-developed permanent water repellent which has been named Quarpel and provide information as to its potential benefit in civilian clothing.

In attendance: Frank J Rizzo, chief, Textile Dyeing Laboratory Branch, Textile, Clothing & Footwear Div; A Morris Campbell, chief, Shade Standards & Tolerances Section, Textile Dyeing Laboratory Branch; Constantine J Megas, technical specialist, Textile Dyeing Laboratory Branch; Carlo G DeMarco, Textile Functional Finishes Branch, Textile, Clothing & Footwear Division.

•

HOWES PUBLISHING CO, INC

44 East 23rd St
New York 10, NY
Booth 2

In attendance: E J Finan, Herbert A Stauderman, Myron D Reeser, and C A Whitehead.

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HUNTER ASSOCIATES LABORATORY, INC

5421 Brier Ridge Rd
McLean, Va
Booth 23

On Display: Hunterlab D25 Color Difference Meter for tristimulus values of color and small color differences, for color matching, color shading, processing and fading tests (direct-reading color-difference attachment will be demonstrated); D40 Whiteness Reflectometer for measuring visual whiteness, bleaching progress, yellowing due to finishing and service, soiling and soil removal, and optical brightening; D16 Lustermeter for gloss measurements of synthetic fibers and yarns.

In attendance: Richard S Hunter, president; Mary B Spicer, instrument sales.

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MORTON SALT CO

110 North Wacker Dr
Chicago 6, Ill
Booth 4

This exhibit will feature Morton Dendritic Salt, which is said to be the first new salt form in 75 years. Technical and sales management personnel will be on hand to discuss application of this new product in the textile industry.

In attendance: J M Culp, staff chemical/textile products engineer; J M Page, technical service manager; D M Hegeman, industrial field manager; E R Ravenel, assistant division industrial manager.

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PICK MFG CO

133 Oak St
West Bend, Wis
Booth 13

•

ROHM & HAAS CO

Washington Square
Philadelphia 5, Pa
Booth 1

This exhibit will feature the use of Rohm & Haas' acrylic emulsions as fabric backing and binder, and the use of Rhonite resins in the finishing of fabrics.

In attendance: R G Thomas, J T Taylor, and H F Lawton.

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UNION CARBIDE CHEMICALS CO
Division of Union Carbide Corp

270 Park Ave
New York 17, NY
Booths 44 and 45

This exhibit will promote the Company's customer service and its technical assistance.

In attendance: R C Boltz, sales manager; B A Gustin, sales manager, Eastern Division; R W Lindberg, manager, Buffalo district; technical representatives from the field sales force and the customer service laboratory.

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WALLERSTEIN CO
Division of Baxter Laboratories, Inc

Wallerstein Sq
Mariners Harbor
Staten Island 3, NY
Booth 26

Hospitality booth.

In attendance: James J Casserly, J C Robertson, J L Huckabee.

Your Host———

THE NIAGARA FRONTIER SECTION

ANTON M VIDITZ-WARD

CANADA is separated from the United States along its picturesque Niagara Frontier by the Niagara River. Compacted into this industrially important part of the country is one of the largest dyestuff and chemical manufacturing concentrations. Textile manufacturing of all description, especially north of the border, is the rule. With the dyestuff industry on one hand and the textile manufacturing on the other, it was only a matter of time before mutual interests would get both parties interested. In the late summer of 1954, preliminary meetings were held at the Research Laboratory of the National Gypsum Company in the Town of Tonawanda. The first official meeting was held on October 8, 1954. Membership today is almost evenly divided between Canadians and Americans many of which have dual membership in the AATCC and the Canadian Association of Colourists and Chemists, Ontario Section.

Some of the traditions still developing are the practice of most of the officers to serve two years in office and being re-elected for their second term. American and Canadian chairmen alternate in responsibility and guidance of this section. The outing is usually held at the challenging and charming golf course at St Catherines, Ontario.

This type of close association has brought about a truly international flavor to the Niagara Frontier Section, unique among all the other Sections of AATCC. Lectures have been given by Canadian, European and American dyestuff & chemical companies in keeping with the interest of all its members. It is truly a demonstration of the good neighbor policy practiced by each and everyone of its members.

Following is a list of chairmen of th Niagara Frontier Section since its inception in 1954:—

1954 Jean G Kern
1955 John Wallace
1956-7 William H Leyking
1958-9 Kenneth A Lister
1960-1 Anton M Viditz-Ward

A HISTORY OF THE ONTARIO SECTION, CATCC*

IN the year 1935 the city of Hamilton in the province of Ontario was one of the focal points of the primary textiles industry in Ontario. Throughout the surrounding area, a large number of fully integrated mills manufactured a variety of textile products. Consequently, the area was a mecca for representatives of the textile supply trades, many of whom operated from headquarters or branch offices of textile chemical specialty firms or dyestuff distributing companies located in Hamilton or adjacent municipalities.

Some years prior to the year 1935, the growing Canadian primary textiles industry—far less complex an industry than it is today, being concerned primarily with the natural fibers, wool, cotton and silk—was not too concerned with textile technology. In other words the industry had no technical associations. Fortunately, however, there were in the industry and its supply trades men with vision and determination who recognized, and were farsighted enough to realize, that the era of relatively simple and straightforward operations within the textile industry was rapidly drawing to a close.

In the United Kingdom and the United States, too, prior to 1935, the dawn was breaking on the horizon of a new era, in the full light of which was born "test-tube textiles," more prosaically known today as man-made fiber textiles.

The advent of the new fibers, which called for new processes and methods hitherto unheard of in the textile industry, brought also new complexities and problems, not only for mill managements but also for the dyers and the chemists.

Thus did the need for technical associations in the Canadian primary textiles industry become more pronounced. The textile technologists—the chemists and dyers—were avidly searching for increased knowledge of the application of dyes and chemicals in the industry, as well as the opportunity to increase research work on chemical processes and materials of importance in the industry.

SEARCH FOR KNOWLEDGE——These men were eager to establish channels for increased interchange of professional knowledge and ideas while at the same time sponsoring and encouraging technical education in the primary textiles industry. Furthermore, industry itself was slowly awakening to the realization that having a working knowledge of the basic fundamentals of textile manufacturing was not good enough any more, that is, if the industry in Canada was to grow and prosper and increase its stature in the manufacturing economy of the nation.

Thus it was, then, that this industry realization, brought about by the increasing complexities and problems with which it found itself confronted, led first to the birth of textile technological activity and shortly thereafter to the promotion of textile education activities. Both developments very quickly assumed important proportions and throughout the intervening years, despite industry vicissitudes which have wrought many changes, have played stellar roles in the growth and progress of textile manufacturing in Canada.

As was noted earlier, the city of Hamilton, in the early '30s, was a main focal point of the textile industry in Ontario. "The Ambitious City"—as Hamilton has long been known—boasts also another distinction. Within its confines was born the first textile technical association in Canada.

THE FIRST MEETING———In a room in the old Elmar Hotel in Ham-

*Reprinted from the Souvenir Booklet "Twenty-Five Years of Growth and Progress 1935-1960", commemorating the Ontario Section's 25th Year.

ilton, on the night of February 7, 1935, at 8:30 o'clock, a group of enthusiasts held a meeting. There were 19 textile men there and they discussed formation of an association along the lines of the American Association of Textile Chemists and Colorists. It was agreed that such an association should be formed. A constitution was drafted and those in attendance contributed $1 apiece to finance the fledgling organization. Thus came into being the Canadian Association of Textile Colourists and Chemists.

Present at this historic meeting were: W P Gudgeon, E P Carney, John M Robbie, John P Kershaw, A Freeman, John L Volk, G A Farley, Wm Roffey, Robert Smith*, Ed McCoy, F Hill, R W Graham, C Borthwick*, H G Clough*, Wm Jackson, A Winser, O Pemberton, Fred Parker* and Robert Bain*. (*Deceased).

After having established a provisional board of directors with E P Carney, president; Fred Parker, vice-president; H G Clough, treasurer, and Ed McCoy, secretary, it was decided to solicit industry-wide support for the new Association.

Accordingly, a letter was sent out under signature of the president which stated in part:

". . . It was decided at our first informal meeting that before settling the various rules, regulations, fees and so forth, that a more representative meeting should be called to which every interested dyer, chemist and finisher in the textile mills in Ontario should be invited." The concluding paragraph stated:

". . . It was the sincere opinion of those attending the first meeting that such an Association as this would fill a long-felt want in the textile trades in Canada and we wish to impress upon you the importance of attending this next meeting—thereby assisting with your attendance and suggestions in the successful formation of this Association. It is further requested that you personally invite the chemist and finisher in your plant . . ."

The early minutes of the Association reveal how successful that letter was in engendering enthusiasm for the young organization. At the first regular meeting held at the Royal Connaught Hotel in Hamilton, Ont, Saturday evening, March 2, 1935, 43 prospective members attended and heard an address by Professor Walker of McMaster University on the activities of the Hamilton Chemists Association.

ENTIRELY CANADIAN——During the business session, it was decided that the Association would be entirely Canadian in character and not affiliated in any way with the American Association of Textile Chemists and Colorists or The Society of Dyers and Colourists of Great Britain. It also agreed that dyers and assistants, finishers, chemists and assistants, dyestuff salesmen and supply men be eligible to membership with full voting rights. The annual dues were set at $5 and officers were duly elected for the ensuing year as follows:

President—E P Carney; Vice President—Fred Parker; Treasurer—H G Clough; Secretary—R W Graham. Executive Board—A Freeman, R Buchanan and C B Musgrave.

It was decided that meetings be conducted on the first Saturday of each month. The final item of business came on a motion from Mr Gudgeon, seconded by Mr Jackson, and carried. It read: "That in appreciation of his services as a dyer and his willingness to impart his knowledge to those who sought it, Mr Robert Bain be elected Honorary President of the Canadian Association of Textile Colourists and Chemists."

A study of the early minutes of the Association quickly reveals the broadening scope of activities within the organization which in turn sparked the interest of industry throughout Ontario. At every monthly meeting new members were enrolled and attendance at the meetings consistently increased.

Meanwhile, the growth of the Ontario textile technical association was being closely watched in Quebec, Canada's other big textile manufacturing province. At the Association's April, 1935, regular meeting, for example, an offer was received from *Canadian Textile Journal* ". . . that the sum of $1 per year would cover a blanket order to include all members of the Association." The offer was readily accepted on motion of John Volk, seconded by W P Gudgeon. It is of interest to note that a year later a new arrangement was made whereby each member paid $1 per year for the magazine. Today, 25 years later, each member pays $1.25 per year for 26 issues of CTJ and, in addition, receives a copy of "The Manual of the Textile Industry of Canada."

At this meeting also, Dr A C Goodings, Director of Textile Department, Ontario Research Foundation, Toronto, Ont, gave an excellent address. The new Constitution as drawn up by Council and the Rules and Regulations Committee was read by W P Gudgeon and approved.

It did not take the new Association long to initiate steps to "sponsor and encourage technical education in the textile industry." At the May, 1935, meeting, R Buchanan suggested a summer school be established in Hamilton. The minutes record that ". . . the suggestion met with wholehearted approval of all present and was referred to Council for a report at the June meeting."

THE SUMMER SCHOOL——At the June meeting, the summer school question was taken up and the minutes record that F W MacBeth, chairman of the Hamilton Board of Education and a member of the Association, reported that "the Association would be accorded the fullest cooperation of the Hamilton Board of Education."

The opening fall meeting of the Association held at the Ontario Research Foundation, Toronto, Ont, October 5, 1935, brought out the largest attendance since formation with 112 members present. R Buchanan reported on "the great success of the recently concluded Summer School."

It was reported that Summer School sessions had been held daily between August 19 and August 23, 1935, and the schedule was as follows: Monday, "Treating of Wool,"—C V Young, Montreal, Que; Tuesday—"Treating of Wool and Mercerized," R Robertson, New York, and A R Akerstrom, Charlotte, NC; Wednesday—"Treating of Pure Silk," B Swanson and R Ferris; Thursday—"Treating of Rayon," Dr E W Pierce, New York, and Friday—"Bleaching of Different Fibres," Gordon D Pratt, Montreal, Que. A minute note states that:

". . . We feel the Summer School was an unqualified success. The register showed that a number of mills throughout both Provinces were well represented. We were fortunate in the quality of instructors and all the men in attendance received a great deal of practical information in the dyeing and bleaching of the various fibres. Combined daily attendance was about 100. This is the first time anything of this nature has been attempted in Canada and we feel that the result of this year's experiment will lead to greater efforts in the future . . ."

It is of interest to note that at this same meeting considerable discussion was held in regard to "the proposed legislation for an eight-hour day." Opinions were given by Mr MacBeth, Mr Buchanan and Mr King, the latter representing *Canadian Textile Journal*. It was decided that the Association "go on record with a letter to the Canadian Manufacturers' Association, pointing out the difficulties that would arise from an eight-hour day and that a ten-hour day would be more suitable to the dyeing industry."

ACTIVE FIRST YEAR———With the first year of organized operation rapidly drawing to a close, it is interesting to read some of the items recorded in the minutes of the November and December meetings. For example, at the November meeting held in the Science Building at McMaster University, an explanation was given of the proposed class in organic chemistry in conjunction with the Arts and Science Course at McMaster. This was presented by Mr Stead, the minutes read, who said "the total fee for the term would amount to $27. A hearty vote of thanks was accorded Mr Stead for his kindness in bringing this subject to the attention of the Association."

At the same meeting, reference was made of "the sudden passing of one of our members, Mr L W McCann." Also reference was made, and congratulations extended, to F E Lennard on his election to the Dominion Parliament. At the December meeting Mr Lennard was warmly welcomed and congratulated on his election as Member of Parliament for Wentworth County.

Thus the Canadian Association of Textile Colourists and Chemists, first textile technical association in Canada, concluded its first year of active operation on a most enthusiastic note and at the next meeting in January, 1936, the members completed plans for the second annual meeting. The year 1936 was destined to be a most significant year in the young life of the still fledgling association, but one in which it would spread its wings to embrace an ever-widening circle of activities beyond the borders of the province in which it was born.

While naturally enough, space does not permit a detailed summary of all the activities of Canada's first textile technical association throughout the intervening years from 1936 to 1959, it is nevertheless interesting to record significant events which have transpired since the Association became firmly established during its first full year of operation.

As was pointed out, the Association's second year—1936—was destined to be a singularly important period in its life and detailed minutes faithfully recorded by the energetic secretary, R W Graham, who took over from Ed McCoy, reveal the growing strength and stature of the organization.

THE QUEBEC SECTION———It was also noted earlier that the dyers and chemists in mills in the neighboring province of Quebec, along with the industry's suppliers in that area of textile activity, were watching closely the progress of the Ontario group.

Consequently, at the March 6, 1936, meeting of the Association, which followed a highly successful second annual meeting, announcement was made that preparations were underway for the inauguration of a Quebec Section of the Canadian Association of Textile Colourists and Chemists. The announcement stated that "a meeting is to be held Saturday, March 28, 1936, in the Windsor Hotel, Montreal, Que, when it is hoped that the executive and several members will represent this Association . . ."

Incidentally, at this March 6 meeting and after considerable discussion, it was decided to hold a Ladies' Night in the form of a dance and O C Pemberton, H Peers and C B Musgrave were named a Committee to handle arrangements. This was the second social and recreational event sponsored by the Association, the first annual golf tournament having been conducted successfully during the first year of operation. These events have been held annually ever since.

As was mentioned earlier, and as recorded in the minutes, the support accorded the Association during formative stages by the *Canadian Textile Journal*, through its editor and publisher, E S Bates, and its managing editor, William King, was considerable. Similarly, the efforts of these men in the establishment of the Quebec Section of the Association, aided by the officers of the Ontario Association, cannot be emphasized too strongly. In fact, Mr King became the Quebec Section's first secretary-treasurer, a position he occupied with distinction for a decade.

Correspondence between E P Carney and Mr King during 1936, summaries of which are contained in Association minutes, emphasize the assistance and wholehearted cooperation given by officers and Council members of the Ontario Association and which contributed in no small measure to the successful launching of the Quebec Association. This organization came into existence at a meeting in March, 1936, was formally inaugurated at a Committee meeting the following month, and held its first annual meeting on April 18, 1936, at the Mount Royal Hotel, Montreal, Que.

And so, having effectively assisted the Quebec Association in getting organized and "off to a good start," officers of the Ontario Group settled down to strengthen and expand operations. Minutes record another successful Summer School for dyers and finishers in 1936, and at a meeting that same year, the first president of the Quebec Association, W B Jackson, personally thanked the officers for the assistance given in aiding formation of his Association. Mr Jackson returned to his native Scotland shortly thereafter.

A TEXTILE SCHOOL?———At the annual meeting of the Association held in Hamilton Ont, February 6, 1937, E P Carney was succeeded as president by R Buchanan. In his annual report, the retiring president said in part:

". . . One of the objects of this Association is: 'to promote increase of knowledge of the application of dyes and chemicals in the textile industry.' I feel the time is now opportune for agitating the question: 'Why isn't it possible for Canada to have a Textile School?'

"Both the United States and the United Kingdom have maintained successful textile schools for a number of years. I feel sure that a large percentage of the members of the Ontario and Quebec Sections, CATCC, are graduates of these schools. Although Canada today enjoys a large textile business, the natural expansion in the country in years to come will tend to vastly increase the amount of business done in the textile field.

"Our Association has been most fortunate in the friendly treatment it has received from McMaster University, the University of Western Ontario, Ontario Research Foundation, National Research Council at Ottawa, and McGill University, Montreal, Que. Surely, with such institutions interested in the textile industry, something tangible is bound to develop regarding a textile school for Canada. We shall be only too

(*continued on page 146*)

A HISTORY OF THE QUEBEC SECTION, CATCC*

ON the fly leaf of an old, and rather dilapidated "end-bound" blank book which, it must be noted, carried proudly a "Made-in-Canada" inscription and cost $1, is a notation which reads:

Proceedings of the Canadian Association of Textile Colourists and Chemists, Quebec Section, organized on March 20th in Montreal in the year 1936.

Eight days later, it is recorded in the "Minute Book," a meeting "of dyers and chemists and others employed in the textile industry in Canada was held at the Windsor Hotel in Montreal. The purpose of the meeting was to organize a Quebec Section of the Canadian Association of Textile Colourists and Chemists."

ORGANIZATION———Just about a year earlier, on February 7, 1935, a group of textile stalwarts interested in furthering establishment of the textile technological movement in Canada, had met in Hamilton, Ont and, as a result, the Canadian Association of Textile Colourists and Chemists, Ontario Section, had been founded and was, at the time of the organization meeting in Montreal, firmly established.

Consequently, as the early minutes show, it was fitting and proper that the president of the CATCC, Ontario Section, E P Carney, and the secretary, R W Graham, should have been the main speakers at the organizational meeting of the Quebec counterpart Section. The minutes record also that "following the dinner the chairman invited guest speakers to address the assembly and afterwards named a Special Committee to organize a Quebec Section of the CATCC."

The Committee comprised the following: J M Lowe, chairman; C Maxwell, W D Johnston, H D Roberts, S B Wood, W Olpinski, E Bradley, H G Greene, R G Davidson, W Stansfield and W B Jackson.

That there was unbounded enthusiasm among this group of men to get things moving, so to speak, is noted in the "Minute Book" which records the first meeting of the Organization Committee held April 4, 1936, with J M Lowe as chairman.

The Committee resolved—so state the minutes:

1)—That a Quebec Section of the Canadian Association of Textile Colourists and Chemists was desirable.
2)—That the first general meeting should be held in Montreal on April 18, 1936.
3)—That a Constitution be drawn up based on that of the CATCC, Ontario Section.
4)—That provisional officers be appointed as follows:
President—W B Jackson; Vice President—S B Wood; Vice President—J P Redston; Secretary-Treasurer—W King. Executive Council—officers and W Olpinski, H D Roberts, M Lang and E Bradley.
5)—That the Quebec Section of the CATCC will meet on the third Saturday in each month with the exception of July, August and September.
6)—That the forthcoming general meeting be asked to approve a membership fee of $5 per year.
7)—That paying members who are not subscribers shall pay, from their membership fee, $1 for a yearly subscription to *Canadian Textile Journal.*

It can be added that, at the first general meeting of the Association, held April 18, 1936, all the main organizational points, requested by the Provisional Committee at its meeting, were unanimously approved.

Thus, the CATCC, Quebec Section, came into being and, while its "growing pains" were to be severe for a considerable period of time, the main platform has remained constant and only essential modifications, dictated by circumstance, have been made through 25 years.

It must be realized, of course, that conditions in the Canadian primary textiles industry, around the time of the birth of the Association in 1936, were somewhat different from what they are today. For example, there were less fibers to deal with, and the industry was primarily concerned with the natural fibers. Nevertheless, there were complexities and this led to a growing concern in industry quarters about the lack of, and the need for, development of a realistic program of textile technological education.

It was recognized, however, that before a sustained program of technological education or training could be instituted, on anything like an organized, long-term basis, the industry itself had to be educated! Consequently, the lot of the chemist and the colorist, the scientist and technologist—in Canada a very small "band of pilgrims"—was not an easy one.

In the United Kingdom and the United States, a new era was dawning. It was realized by those men who had in 1935 organized the CaTCC, Ontario Section, and the realization had been borne in upon those who a year later were establishing the CATCC, Quebec Section, that the synthetic, or man-made, fibers—and then later the blends of natural and man-made fibers—would before too long start a revolutionary trend in textile manufacture which was destined to result in an almost complete reorientation of basic operation.

And what was more important was the growing realization that a "back to school" movement was essential if the Canadian technologist and scientist expected to keep pace with changes brought about by the advent of the new man-made fibers which would necessitate new processes and methods hitherto unheard of.

It was, therefore, on this plateau of operations in the life of the domestic primary textiles industry, that the CATCC, Ontario and Quebec Sections, were born and it was for this reason, primarily, that the period of "growing pains" was lengthy and of sustained severity.

However, perchance it was all to the good that these associations should have been established during such a revolutionary period. At any rate, it heightened enthusiasm and increased the determination of the members of the groups, all of whom were thirsty for increased knowledge of the application of dyes and chemicals in the industry, as well for the opportunity to increase research work on chemical processes and materials of importance to the industry.

(Elsewhere in the CATCC, Quebec Section 25th Anniversary booklet is a chronology wherein, among other details, will be found an accurate listing of speakers and papers

*Reprinted from a commemorative booklet entitled, "Canadian Association of Textile Colourists and Chemists (Quebec Section) —History and Chronology—1936-1961".

delivered at meetings of the Association. A cursory glance at this chronology and more particularly, at the imposing list of papers delivered at technical and other meetings of the Association over a quarter-century, will show quite conclusively what a massive contribution the Association has made to promote the cause of textile education and the dissemination of knowledge of the textile sciences to its members and, through them, to the domestic primary textiles industry generally.)

It is timely to mention, while on the subject of the Association's contribution to the advancement and progress of textile education, the indefatigable work of Association members, not only to better their own lot, as it were, but to improve the position of the industry. The fact of the matter is that the majority of work done, and the notable achievements of the Association, have been the direct result of voluntary effort by the members.

STRONG BONDS——Ever since 1936, when a job needed doing designed for the welfare of the Association, a volunteer stepped forward and on his own time and in his own way, performed the task satisfactorily and unselfishly. Thus, the Association, one might say, has been built and maintained on voluntary effort and, with each passing year, the strength of the organization has grown and its real worth to the industry recognized. Of course, the same holds true for the Ontario Section and it is satisfying to note the strong bonds of friendship which bind the two Sections.

This closeness, while in evidence since inception, was symbolized in lasting fashion when in 1938, only two years after formation of the Quebec Section, and three years after birth of the Ontario Section, the National Council, CATCC, came into being. Ever since, representatives of the two groups have worked together to approve and coordinate Association activities.

While naturally enough, space does not permit a detailed summary of all the many activities of the CATCC, Quebec Section, since inception, it is nevertheless interesting to record significant events which have taken place and through which the Association has grown in stature and importance.

It should be noted that from the date of the first organizational meeting, the support and encouragement given by *Canadian Textile Journal*, through its editor, the late E Stanley Bates and the then managing editor, William King, has been considerable. In actual fact, Mr King, since retired as editor, chaired the organizational meeting and became the Quebec Section's first secretary-treasurer, a position he held with distinction for ten years.

TEXTILE EDUCATION——Since that time, the magazine's interest in the welfare and progress of the Association—and, in very truth, the progress of all the constituent groups of The Textile Technical Federation of Canada—has not waned. Always alive to the need for raising the standards of textile education, the magazine's editors have cooperated with the TTFC and its constituent organizations in any and all endeavors directed to this end.

As far as the CATCC, Quebec Section, is concerned, one of the strongest and liveliest of its standing committees has always been the Education Committee. Through the medium of good fortune and wise choice, the Association has been able to recruit men to serve on this important committee who realized the need for education and were prepared to devote time and energy, in a variety of ways, to promote the cause to which they were dedicated.

Thus the Association cooperated with the Government of the Province of Quebec and the Primary Textiles Institute in establishment of The Textile Institute of the Province of Quebec at St Hyacinthe and, ever since, has been extremely active in promoting night school courses and other special technological clinics and seminars at the Institute and elsewhere.

The Quebec Section's Whattam Award, for example, was set up in September, 1943, at the height of World War 2. This honored the memory of T W Whattam, an outstanding educationist. It has been said that he "believed in education and, what is more, did something about it."

He was a valued member of Council for two years, but preferred to work quietly in his own way and without personal recognition. The Association owes a debt of gratitude to the late Mr Whattam, it can never fully repay, but the part he played in furthering the cause of textile education comes alive each year when some proud young student receives the Award.

No history of the CATCC, Quebec Section, however brief, would be complete without mentioning the contribution—again in the cause of education—made by F D Wallace, who directed the varied activities of the Committee as chairman for 16 years. Under his able guidance, the work of the Association, through this Committee expanded and many are the useful activities undertaken down through the years.

With the work being done by the Association in the Institute at St Hyacinthe, as well as by conducting special events, such as the Symposium Series, establishment of a Scholarship at McGill University and also at the St Hyacinthe school, and other functions of an educational nature, it was decided, in 1955, to establish The Bronze Medal Award, to be made annually to a member for "outstanding and continued devoted service to the Association."

It was hardly surprising that the first recipient should have been F D Wallace. It is just as significant to note, however, that subsequent recipients, H K Torpey, C F Fitton, F J Knight, R W Redston, Dr L J Sheps and this year, C R Teichgraber, have all played important roles in the advancement of textile education and in the dissemination of knowledge of the textile sciences.

It must be added, too, that recognition by the CATCC, Quebec Section, of Mr Wallace's contribution to textile education was followed in 1960 by the Province of Quebec. This came as a result of his work on behalf of The Textile Institute at St Hyacinthe and took the form of a gold medal. Mr Wallace has long been a valued member of the Institute's Advisory Committee and is its chairman.

Consequently, it can be stated that the Quebec Section has been fortunate in having at its disposal the services of men like Mr Wallace, and members of the various Education Committees, just as the Ontario Section has been fortunate in being able to enlist the services of men like E P Carney, R W Graham and others, who have made tremendous contributions to the progress of textile education in Canada.

ESTABLISHMENT OF TTFC——The establishment, in 1939 of a "Federation of Textile Technical Associations of Canada," later to become The Textile Technical Federation of Canada, which is the central liaison organization coordinating the activities of the eight textile technological associations in the country, has

long had the active support of the CATCC, Quebec Section.

While the TTFC actually was the "brain child" of E P Carney, its president for the first ten years, and Peter W Webb, its first secretary, they did have the active support and real encouragement of men like the late E S Bates and E Bradley, J P Redston and W King. Referring to establishment of the TTFC, *Canadian Textile Journal*, in its February 17, 1939 issue, had this to say: ". . . The Federation is considered to be the logical result of textile technical association development in Canada in the past few years. It will be recalled that the Ontario Section, CATCC, was established in 1935, and the Quebec Section, CATCC, a year later. In 1937, the Western and Eastern Divisions of the Textile Society of Canada were formed.

". . . In 1938 there was a remarkable increase in the facilities available for technical training of employees, due largely to the efforts of the CATCC and Textile Society. Increased activity led to a demand for closer cooperation between the various groups and for uniformity of syllabuses, examinations, etc. It is in this direction and in matters of standards and research that the Federation is expected to prove most useful. . ."

Thus the contribution of the CATCC, Quebec Section, to the establishment and subsequent growth of the TTFC cannot be underestimated. It has always been cognizant of, and an active supporter in, the work of the Federation and many of its staunchest members have prominently identified themselves with the work of the TTFC. Two such members, H K Torpey and L J Sheps have been presidents of the organization.

Again with the accent on education, but in slightly different form, the CATCC, Quebec Section, in 1955 sponsored the first publicly-viewed exhibit of Made-in-Canada textiles. This was the Panorama of Canadian Textiles, held at the Mount Royal Hotel, Montreal. Actually this display was a forerunner to the Canadian Textile Conferences, the second of which was held in February of this year, with the first also in Montreal in 1958.

"LITTLE SEMINARS"——Mention has been made of the Section's tremendously well received Symposium Series, conceived and initiated by two former presidents, L J Sheps and C E Coke, and which were first conducted in 1954. This rather unique project was patterned in some respects after the Canadian Textile Seminars, only on a much smaller scale, but just as effective in broadening the horizons of textile education and in the dissemination of knowledge of the textile sciences.

And, speaking of the biennial Seminars, held at Queen's University, it is fair to say that members of the Section have been consistently active in these TTFC-sponsored events which have long since achieved international recognition. In fact, two former presidents have been Seminar General Chairmen, J P Redston and F J Knight, while another former president, H K Torpey, (as well as Mr Knight) have received the Federation's Meritorious Service Award. Messrs Torpey and Knight are also former recipients of The Bronze Medal Award, in 1956 and 1958, respectively.

Annually over the past several years, there has been increasing evidence of industry support of the work being accomplished by the CATCC, Quebec Section. This support is now tangibly expressed annually through a system of Section Corporate Memberships, organized and established in 1956. The very fact that major fiber producers and textile manufacturing concerns in the primary textiles industry are today corporate members is indicative of the work and worth of the Association.

It is not often one sees an organization, established by and maintained through, voluntary effort on the part of more than 300 members, operated strictly along parliamentary lines. This is the case with the CATCC, Quebec Section. Every activity from Council and general meetings, through to endeavors of a more public nature is carried out according to the letter of the Constitution and based on parliamentary procedure. Perhaps it is because of this policy that the Association has attracted and been able to enlist the wholehearted support of prominent textile technologists and scientists as officers and members of Council and others to represent the Section as delegates to various organizations.

In the matter of honorary presidents, for example, the CATCC, Quebec Section, has had but three in 25 years and this number would have been reduced had it not been for the intervention of the Grim Reaper. E Bradley was elected the first honorary president in 1939. Following his death, C A Reiser was elected in 1959, and after he passed away, the current honorary president, S H Chambers was elected, in 1960. In 25 years, the Section has had 15 presidents with J G Soroka at the helm today.

AWARDS, TROPHIES——It was in 1953 that the Association decided to establish its 50-Year Service Awards, honoring veterans with 50 or more years of service in the primary textiles industry. Ever cognizant of the need for more and more young, skilled technologists in industry, the Section, in 1955-56, established the McGill Annual Scholarship Award which, incidentally was won in 1957-58 and again in 1959-60, by girls. A year later, The Textile Institute of the Province of Quebec Award was established and is annually sought after by keen students.

On the recreational side of the Section's ledger, there are other awards in annual competition. These include the H D Roberts Cup and, more recently, the Past Presidents Trophy, both of which are up for competition at the Section's annual Golf Tournament which has been held at various points in Quebec on the third Saturday in June since 1937. A more recent innovation of a social nature was the annual Ladies' Night, first held in October, 1957. These are gala, well-attended functions.

In a summarized history such as this it is virtually impossible to recount in any great detail, all the activities and events which have taken place over a period of 25 years. It will be noted, however, that in certain instances, names have been mentioned. While the contribution to the welfare and progress of the Section made by these Association stalwarts has been substantial, the mention of their names is only incidental to the picture of the organization as a whole.

The success of any organization in any industry is dependent upon the membership as a whole.

An organization is only as strong as its members, just as it is only as strong as the industry it serves.

As was noted earlier, the complexities and problems with which the industry was faced a quarter-century ago still persist but are perhaps more concentrated.

Notwithstanding this fact, however, the CATCC, Quebec Section, has thus

far withstood, extraordinarily well, the trials and tribulations which beset the industry while, at the same time, making a sizeable contribution to the development and advancement of textile education in the Province of Quebec. Such contribution has been recognized by industry and by Government.

GRATEFUL APPRECIATION—— The theme of the Section's 25th Anniversary celebrations is ". . . From Silver to Gold. . ." It stands today on the threshold of the second 25 years of its existence.

It is justifiably proud of its heritage, and its accomplishments, in various fields of endeavor, have done a great deal to strengthen the industry and to assist it in weathering the many severe storms of adversity with which it has been buffeted. The industry can count on its continued support in the future.

On the other hand, the Association is gratefully appreciative of industry's support for it realizes that without such support, in whatever measure, its existence would be precarious at best.

Thus it is that the Canadian Association of Textile Colourists and Chemists, Quebec Section, expresses grateful thanks to industry, to its members and to those members of other associations who have in any way aided the organization in reaching this milestone in its history.

The officers, members of Council and general membership look to the future ". . . From Silver to Gold. . ." with quiet confidence.

They know that the primary textiles industry in Canada is considered basic to the economy of the nation. If it is accorded the support and assistance it so richly deserves, the technological associations in Canada—and the CATCC, Quebec Section, has long been a strong component part of The Textile Technical Federation of Canada—will continue their forward progress and play an even more vital role in the affairs of industry.

* * *

Following is a list of presidents of the Quebec Section since its beginning in 1936:

W B Jackson	1936
S B Wood	1937
J P Redston	1938-1939
G C Taylor	1940-1941
E N Fidler	1942-1943
F J Knight	1944-1945
H K Torpey	1946-1947
F D Wallace	1948-1949
C Wills	1950-1951
S W Milnes	1952-1953
L J Sheps	1954-1955
L E Moody	1956
C E Coke	1957-1958
S H Chambers	1959
J G Soroka	1960-1961

ELEVENTH AMERICAN DYESTUFF REPORTER AWARD

THE winner of the eleventh annual American Dyestuff Reporter Award will be announced at the Awards Luncheon on Thursday, September 28, at the Statler-Hilton Hotel, Buffalo, NY.

Judges for this year's contest, appointed by the AATCC Publications Committee are: Paul B Stam, J P Stevens & Co, *chairman;* Charles R Williams, Monsanto Chemical Co; and Victor S Salvin, Celanese Fibers Co.

The Award was endowed by the Howes Publishing Company, Inc, as a memorial to Alfred P Howes, founder of the *American Dyestuff Reporter.* Its purpose is to encourage the presentation of the best possible papers before local and national meetings of the Association. The Award, $200 annually, is presented to the author or authors of the paper considered best in the opinion of the judges. Any technical paper presented before a local or national meeting of the AATCC and published in the *Proceedings* as they appear in the *American Dyestuff Reporter* is eligible with the following exceptions: Intersectional Contest papers, papers by employees of the AATCC, reports of research committees. It is a condition of eligibility that the paper have its first publication in the *Proceedings.* Papers published in the *Proceedings* from July 1st of one year to June 30th of the next year are considered in each judging period. Previous winners are shown in table below.

Year	*Authors*	*Title*	*Where Presented*	*Date of Publication*
1951	Mason Hayek and Fred C Chromey, E I du Pont de Nemours & Co, Inc	"The Measurement of Static Electricity"	1950 National Convention	March 5, 1951
1952	Charles J Lyle, Joseph J Iannarone and Robert J Thomas, E I du Pont de Nemours & Co, Inc	"High-Temperature Dyeing of New Synthetic Fibers"	Rhode Island Section	September 17, 1952
1953	Robert H Blaker, E I du Pont de Nemours & Co, Inc	"Principles of Copper Dyeing of Polyacrylonitrile Fibers: The Controlled Redox-Potential Method"	1952 National Convention	February 2, 1953
1954	Charles L Zimmerman, American Cyanamid Co	"The Application of Dyes to Textile Fibers at High Temperatures"	Metropolitan Section	September 14, 1953
1955	Henry E Millson, American Cyanamid Co	"The Microdyeoscope: Microscopical Observations of Dyeing"	Metropolitan, Southeastern, Mid-West, Delaware Valley and Rhode Island Sections	June 20, 1955
1956	Fred Fortess, Celanese Corp of America	"Dyeing, Finishing and Heat Treating Arnel Triacetate"	Metropolitan Section	August 1, 1955
1957	Irving A Berstein, Controls for Radiation, Inc	"Applications of Radio-Activity in the Textile Industry"	Piedmont Section	June 3, 1957
1958	Emery I Valko, Giuliana S Tesoro and Waldek L Ginilewicz, Onyx Oil and Chemical Co	"Elimination of Static Electricity from Textiles by Chemical Finishing"	1957 National Convention	June 16, 1958
1959	Charles R Williams, Monsanto Chemical Co	"Quantitative Measurement of Fabric Appearance—Practical Evaluation of 'Wash-and-Wear' Characteristics"	Metropolitan Section	February 23, 1959
1960	Victor S Salvin, Ruth A Walker, and John R Adams Jr, Celanese Fibers Co	"Relation of Dye Structure to Properties of Disperse Dyes"	Piedmont Section	July 13, 1959

Autobiography of the 18th Olney Medalist———

FRED FORTESS: OLNEY MEDALIST 1961

THE Olney Award has given me the opportunity to reflect on those factors in my personal life and professional career which have made it possible for me to merit this high honor.

FORMATIVE YEARS———I was born in Antwerp, Belgium, on September 4, 1913. My father, David, was a diamond cutter who, 10 years previously, had left Odessa, Russia, to escape the Czarist oppression. From him I learned to detest any type of oppression of fellow humans, whether White Russian or Communist Red. He placed a high value on service to both the community and one's fellow man.

My mother, Sarah, also migrated to Belgium from a peasant village in Galica, a part of Poland, then as now under Russian domination. She found joy in simple things. She loved the soil and the countryside, and in later years, when we lived in Chicago, her greatest pleasure was to visit the farms and sand dunes of Western Michigan where she could be close to growing things and the animals. From her I learned to appreciate people for themselves and to be understanding of their shortcomings.

World War I swept over Europe, and the Fortess family, including older brother Karl, age 7, and myself, age 2, found themselves refugees, first for a short period in London, and then Chicago. My early years included frequent trips to the Lincoln Park Zoological Gardens, the Chicago Museum of Natural History, the Field Museum of Natural History, the Chicago Civic Opera, and the Chicago Museum of Art.

Even a large city can be full of adventure and exploration, and from the earliest age that I could count streetcar fare, with my younger brother, Leo, in tow, we visited every park, museum, and forest reserve in the Chicago vicinity. Our crowded apartment, in the most densely populated part of the city, became a repository of crayfish, turtles, snakes, insects, rocks and plants.

EARLY EDUCATION——My early public school education is fairly vague except for one brief experience with the "Little Red School House" so eulogized in American fiction. At the age of nine, I was sent to live in a farm community because of poor health and underweight. I shall never forget the eight rows of desks, one for each of the eight grades, all in one small room. To sit quietly for hours while the other "classes" recited was unbearable torture. In retrospect, it is difficult to know who to pity most—the squirming children or the harassed teacher, forced to act as the strict disciplinarian to preserve his sanity.

Crane Technical High School was my first exposure to organized knowledge in quantities sufficient to satisfy my curiosity. My energies were channeled by two teachers in particular. Mrs Grant, the biology teacher, a wonderful old lady, helped me discover the limitless wonders of nature in a drop of swamp water, a leaf, or the wing of a fly. "Doc" Coulson, the chemistry teacher, wrought miracles with devilish odors and flashes of energy while cramming our minds with masses of facts and hypotheses. My exposure to the unifying principle of the Periodic Table of Elements was even more electrifying than the charting of the stars by the astronomers. The influence of these two teachers convinced me that my future career would be in medicine or biochemistry. My preoccupation with the Periodic Table helped me win a scholarship to the University of Chicago because the exam in chemistry was almost entirely concerned with Mendeleev's Theory.

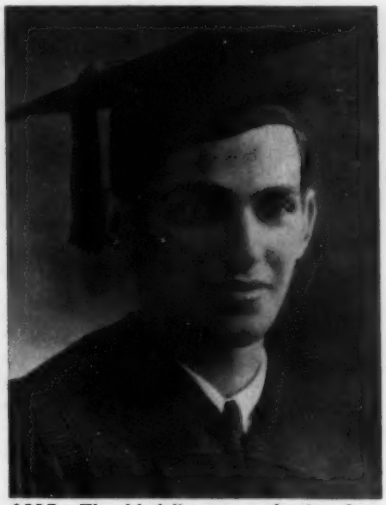
Fred Fortess, manager, Dyeing and Finishing Laboratories, Celanese Fibers Co, Charlotte, NC, will be presented the 18th impression of the Olney Medal during the annual Awards Luncheon, to be held Thursday, September 28, at the Statler-Hilton Hotel, Buffalo, NY.

The Olney Medal, which is endowed by Howes Publishing Co, Inc, publisher of *American Dyestuff Reporter*, is awarded by AATCC in recognition of outstanding achievement in the field of textile chemistry, including the development of chemical agents or chemical processes used in the manufacture of textiles, or methods for their evaluation. Its purposes are to encourage and to afford public recognition of such achievements and contributions, and to be a testimonial to Dr Louis Atwell Olney in recognition of his lifetime of devotion and multitudinous contributions to this field.

UNIVERSITY OF CHICAGO AND ROBERT M HUTCHINS———By some wonderful coincidence I came to the University of Chicago at about the time that Robert Maynard Hutchins became president of the University. The colleges, particularly the physical and biological sciences, were in a stage of reorganization. Dr Hutchins' philosophy of education de-emphasized specialization in all of the colleges for at least the first two years. By organizing the survey courses in the Biological Sciences, the Humanities, the Physical Sciences, and the Social Sciences, the University made sure each student, whatever was his original interest, was exposed to an intensive review of every phase of Mankind's knowledge of Self and His experience with Nature. Chemistry lecture halls, which had been the exclusive domain of small select groups, were now filled to capacity with students who expected to end up in law, archeology, economics, etc.

It was one of Dr Hutchins' conscious aims to bring the bright young minds directly in contact at this early age with Nobel Prize winners and with scholars who had achieved stature in their particular field. Men like Karl Compton, Robert Millikin, James Franck, Julius Stieglitz, Anton J Carlson in Science, and their counterparts in the Humanities and Sociology, who normally would concern themselves entirely with Graduate Students, were suddenly carrying on a private discussion with starry-eyed youngsters on the Purpose of Life and the Quest for Knowledge. For this enforced exposure to the widest reaches of man's

1915—Older brother Karl, now artist and professor in Department of Fine Arts, Boston University, and mother, with the future Olney Medalist on her knee



1935—The Medalist on graduation from the University of Chicago

1938—Research Fellow, University of Chicago, preparing to take absorption spectrum of Europium ions in solution

knowledge I am forever indebted to Dr Hutchins. Many times in the 25 years that have passed since then, this three-dimensional view of man and his institutions has made it possible for me to judge scientific problems against a background of social values and political institutions.

TEACHING AND GRADUATE RESEARCH ——— On graduation from the University in June, 1935, I found that I needed some time for reappraisal and digestion of the previous years of intensive learning before considering graduate studies. Although the campus had not been entirely sheltered from the almost complete collapse of the financial and industrial structure of the Western World, I was suddenly struck with its impact when I sought employment in industry.

My family, at that time, decided to move to a small farm community near Saginaw, Michigan. I discovered that the State of Michigan was setting up experimental schools in rural communities and was looking for teachers. Soon I was teaching the Physical and Biological Sciences in Alicia Township near Saginaw, using the project system of study. At least half of the classroom time was spent in the best laboratory facilities available—the woods, fields, streams, and barnyards of the surrounding countryside. I used this same approach more than 20 years later in setting up science projects at the Children's Nature Museum in Charlotte. After two years, the State of Michigan was ready to increase the number of these experimental schools, and I was ready to go back to the University of Chicago for graduate work.

Aided by a fellowship and a lecture demonstration assistantship to Professor Herman I Schlesinger, who was also chairman of the Chemistry Department, I was able to achieve two years of graduate study with emphasis on physical and organic chemistry. At this point I made two important decisions: the first to ask Ethel Miller, a lovely young lady from Philadelphia, who I met in Michigan the year before, for her hand in marriage; and the second, to do graduate research in physical chemistry under Professor Simon Freed, who was as much a philosopher as he was a brilliant, inspiring scientist.

Ethel, in retrospect, feels that this double choice is the story of our married life, since for more than 20 years I have participated in community and scientific projects which have altered the normal flow of family life. Because she was able to appreciate the intensity of my interests, and permitted me the endless hours, sometimes far into the night, ours has been a happy and fruitful marriage. This, coupled with a freedom from pressure to accumulate material comforts, and the encouragement to work at what gives me greatest satisfaction, earns for Ethel a just claim to share with me the honor and pleasure of the Olney Award.

FIRST INDUSTRY JOB———In preparation for marriage, I found employment in the research laboratories of the Universal Oil Products Company at Riverside, Illinois. By special arrangement with the University of Chicago, I was able to continue graduate research under Professor Freed in the evenings. Some of the most original research in hydrocarbon chemistry was in progress at Universal Oil Products under Dr Vladimer Ipatieff, the father of high-pressure thermal and catalytic hydrocarbon reactions, and Dr Herman Pines and Dr Herman Block in isomerization, dehydro-cyclicization and hydrogenation.

On February 4, 1939, Ethel and I were married. In September of that same year there was published, in the *Journal of Chemical Physics*, a paper with the title "Ions of Europuim Distributed between Different Configurations in Homgeneous Solutions" of which I was co-author with Simon Freed and Sam I Weissman.

While the Europium ion was at peace, Europe was not. With the declaration of World War II, a strange silence settled over the physical sciences area of the campus. Friends with whom I had previously discussed every aspect of their work, whether it was the cyclotron or cloud chamber studies, now became evasive. Dr Louis Slotin, a Canadian scientist, who later lost his life due to accidental excessive exposure to a neutron beam at Las Alomos, and many others quietly left the campus. By 1942, the Stagg Athletic Field, where as an undergraduate I had run many a half mile and mile in Big Ten competition, was closed off from all public use. Several years later the

1940—Ethel and Fred at Mt Estes, Black Hills, after fossil collecting in Badlands, South Dakota

Nation learned that the pile for the first self-perpetuating nuclear reaction had been under construction.

EMPLOYMENT WITH CELANESE———The crucial scarcity of natural rubber needed for the war effort placed a high priority on the development of new sources of butadiene. The Celanese Corporation of America had been awarded a government contract based on its new process for making 1,3 butanediol from acetaldehyde. On April 1, 1942, I joined the staff of the Amcelle Celanese operations near Cumberland, Maryland, to work on a process for the vapor phase catalytic dehydration of the 1,3 butanediol to butadiene. This was the first of a long series of problems through which Celanese permitted me, as well as its other research workers, the satisfaction of individually exercising responsibility at the laboratory level. It was through this totally unrelated problem that I became associated with the Textile Industry.

FIRST CONTACT WITH TEXTILE INDUSTRY———The Celanese Corporation, founded by Camille and Henri Dreyfus in 1924, was still a relatively young organization in 1942. Its technical staff was primarily concerned with supporting manufacturing processes. I had joined Celanese with a preconceived notion that the Textile Industry was relatively primitive with little room for the application of modern technology and science. However, I soon discovered that, compared with the hydrocarbon research and other phases of industrial research with which I was familiar, even the simplest problem of polymer manufacturing, fiber formation, or textile processing was extremely complex. It was largely through the guidance of G Wilbur Seymour, the technical director of the Amcelle Plant, that I achieved sufficient assurance that physical and chemical principles could be usefully applied to the many complex problems involved in these processes.

My first textile problem was to develop new and improved lubricants and finishes for application to both continuous filament yarns and cut staple. The object was to apply complex colloidal solutions or emulsions to yarns and fibers so that fiber-to-fiber and fiber-to-guide surface frictional properties would be optimum for a wide variety of processes from carding, drawing and spinning, through beaming and weaving. In addition, these finishes had to dissipate any static electricity generated in processing. Now, after 15 years of experience in this field, I am still amazed at how little we really know, and how many problems remain to tax the best tools and principles of colloid and surface chemistry.

By 1946, I was responsible for both the Lubrication and Sizing Development Sections. Not only did this work give me an insight into many complex physical and chemical problems, but also provided an excellent opportunity to learn the intricacies of mechanical and processing technology, from carding and spinning through weaving and knitting, for which the Textile Industry is justly renowned.

The war years had brought home to Celanese the importance of controlling the supply of the basic raw materials for its cellulose acetate manufacturing. This led to the development of major chemical production plants in Texas and Canada. Chemical cellulose requirements were met by a major woodpulping, chemical purification of cellulose and papermaking operation at Prince Rupert, British Columbia.

CENTRAL RESEARCH LABORATORIES, SUMMIT, NJ———By 1947, this diversification of products to include fibers, plastics, film, chemicals, paper and related materials, justified establishment of a Central Research Laboratory located at Summit, New Jersey. My first major project in these new laboratories was concerned with byproduct utilization of the various chemical components in sulfite pulping waste liquors. The Canadian Government anticipated a

1946—Fred, Ethel and June, age 1. Background is Amcelle Plant of Celanese Corporation, Cumberland, Maryland.

stream-pollution problem from our pulping plant, and the first problem was to reduce the Biological Oxygen Demand by developing a fermentation process to consume the solubilized carbohydrates in the waste liquor. One year later we applied for patents on a continuous fermentation process for the production of propionic and butyric acids using bacteria with the unfamiliar name of propionibacterium arabinosum. I derived great satisfaction from the combination of my interests in chemical processes with that of the utilization of living organisms as chemical manufacturing plants.

Subsequent work with lignosulfonate components led to a number of low-cost industrial dispersing agents and a patent for an alkali fusion process which produced excellent yields of vanillin from lignin.

In 1949, I had my first opportunity to work in the field of greatest interest to Celanese—cellulose chemistry. I was perfectly happy to go back to being a bench chemist under the able and kindly leadership of Miss Blanche B White, and to be associated with such first-rate organic and physical chemists as Leonard Rosen, Jesse Riley, and Arnold Rosenthal. This was chemistry at its best and most complex. It involved studies of the activation of cellulose in preparation for heterogeneous reactions, superacidity catalysis phenomenon, and competing reaction rates between three hydroxyl groups and hydrolytic degradation of the cellulose polymer chain. This research was an excellent discipline in physical principles and was my first exposure to the

1959—Ethel and Fred at home. The painting is by older brother Karl, professor of art at Boston University.

1960—Olney Medalist in white cap, leading Nature Museum fossil-collecting trip to 35-million-year-old limestone deposit at Harleyville, South Carolina

behavior of macromolecules. It was during this period that I completed and published a personal study I had initiated years before at Cumberland in which the specific gravity pycnometer was used to measure the interaction of various liquid organic compounds with fibrous materials—in this case, cellulose acetate.

In 1950, the Lubrication and Sizing Project was transferred to the Central Research Laboratories, and I was assigned as its section head. At about this time, Dow Corning and General Electric had made available small quantities of siloxane polymers prepared by polymerizing various proportions of dimethyl dichlorosilane and dimethylchlorohydrogen silane. A basic chemical and physical study of these products, available under the generic name of silicones, led to two results: 1) the addition of fabric finishing to the responsibility of my section; and 2) a more fundamental understanding of those factors which influence durable application of the silicone polymers and the mechanism by which improved abrasion, wrinkle performance, and sewability, resulted on a wide variety of textile fibers and fabric constructions. My first presentation of this broader insight into the behavior of this new finishing chemical was made to the Third Canadian Textile Seminar in 1952. A subsequent paper presented as part of an American Chemical Society Symposium in 1954, included microphotographs of the extremely thin sheaths of silicone polymer which were separated when the encapsulated acetate fiber was dissolved away by acetone.

ACETATE AND TRIACETATE——In the early 1950's, Celanese was beginning to feel the full impact of the demand for washable "ease-of-care" fabrics. While secondary acetate fabrics are durable to repeated washing, they will shrink, have poor color washfastness above 120°F, and have to be ironed at a relatively low setting. In an effort to improve the washability and "ease-of-care" properties of dyed acetate fabrics, the Finishing Group was combined with Victor S Salvin's Dyeing and Dye Synthesis Group. This group had 15 years of experience with disperse dye synthesis and a combination of this knowledge, with the use of selected crosslinking reactants which would penetrate the dyed acetate fiber and fix the dye, led to a dyeing and finishing process which resulted in significantly improved washfastness of color and some improvement in shrinkage and ironing properties. This work was published in the *American Dyestuff Reporter* of November 4, 1954, under the title "Improved Washfastness of Acetate-Rayon Blends".

At best, this approach was a stopgap and the next important phase of this project involved the rediscovery of cellulose triacetate. Actually the fully acetylated cellulose triacetate was known many years prior to the secondary acetate which Celanese began to produce in 1924. The Lustron Company had begun commercial production of the triacetate in 1914, but failed for a variety of reasons, including spinning solvent problems and the absence of suitable dyes and dyeing systems. Almost 40 years later, groups in both the British and American Celanese research laboratories solved the major problems of manufacture and dyeing, and the triacetate fiber was reborn. Response to heat treatment was one very significant new property of the triacetate fiber, which was trademarked as Arnel in the USA, which made it a full-fledged member of the "ease-of-care" family of fibers.

One of the most rewarding experiences of my professional career to date was this association with the research and development effort which, in less than two years, produced a commercial triacetate fiber and was able to support it with the practical know-how in weaving, knitting, dyeing, heat treatment, and finishing. It was a tremendous team effort which made full use of the cellulose chemists under Miss White; the fiber physicists under B Sheldon Sprague: and my dyeing and finishing group, assisted by my coworkers Victor Salvin and William Myles. Publication of the results of part of this joint effort as the paper "Dyeing, Finishing, and Heat-Treating Arnel Triacetate" in 1955 won for me the 1956 American Dyestuff Reporter Award. The 18 names listed in the acknowledgment of this paper were due to actual and not gratuitous contributions.

CHARLOTTE, NC — DIRECT CONTACT WITH TEXTILE INDUSTRY——The commercial, as well as the technical success of Arnel triacetate pointed up the need for a strong technical supporting organization within the Celanese Fibers Company's Marketing Division. Dr Reiner G Stoll, who had given direction to the Arnel triacetate project, was made director of applications & product development and given the responsibility of organizing textile processing, dyeing and finishing, and fiber and fabric evaluation facilities and services to be located at Charlotte, North Carolina. I was given the opportunity of managing

the Dyeing & Finishing Laboratories. In August 1956, a staff of experienced research personnel moved from Summit, New Jersey, and senior commercial dyehouse personnel from the Celanese commission dyehouse located at Hopewell, Virginia, joined me in the new facilities. I had some misgivings as to whether I would find personal satisfaction in a managerial responsibility after twenty years of direct participation in research and development activities. Dr Stoll helped me bridge the gap between the research laboratory and the market place by citing numerous examples in which important research achievements were brought to commercial success by effective communications with the marketing people who include sales and merchandising.

The establishment of the Dyeing & Finishing Laboratories and Pilot Plant brought my staff and me directly into contact with the Textile Industry because our major responsibility was to solve problems arising in customer dyehouses. This required that we have a complete working knowledge of cotton, wool, nylon, and the acrylics, as well as the Celanese fibers—acetate, triacetate, rayon, Fortisan, and subsequently Fortrel polyester and Darvan. It is quite a surprise to find, at this date in 1961, that we are doing as much research and development in support of customer problems as we ever did in assessing and supporting new Celanese fibers.

AATCC AND RELATED TECHNICAL ACTIVITIES——Thus far I have outlined those technical experiences which directly related to my responsibilities with Celanese. In order to maintain a constant awareness of the broadest changes in the field of chemistry, I have had to find time and energy for active participation in technical societies and related activities.

During more than 25 years of membership in the American Chemical Society, I have had frequent exposures to the influences of men and their ideas which have had a direct impact on the technical content of the Textile Industry. It was through ACS that, as early as 1942-43, in the out-of-the-way place of Cumberland, Maryland, I came in contact with Milton Harris, Herman Mark, and Emil Ott. Subsequently I have contributed to broadening an appreciation for chemistry applied to textiles by presenting papers at the National ACS meetings on cellulose chemistry, silicon polymers as applied to fabric finishing, and on the mechanism of dyeing.

The AATCC did not come into sharp focus for me until the introduction of Arnel triacetate in 1954, which required the translation of basic laboratory and pilot-plant dyeing and finishing recommendations into 20 or more key dyehouses throughout the Eastern seaboard. This brought me directly into contact with hundreds of skilled dyehouse personnel who, in the final analysis, have the responsibility for reducing to practice the constant stream of new dyeing and finishing processes on established fibers, and for adapting old processes to new fibers. Basic laboratory chemical research was no more challenging and rewarding than was working with these men.

Although I have presented papers before local AATCC sections on silicone finishing, factors influencing soilage of carpets, and the dyeing and finishing of Arnel triacetate, it was not until the move to Charlotte, NC, in 1956, that I was fully aware of the rich technical life possible in our Association. Because I was primarily interested in research, I was given the opportunity to serve as vice chairman of the Piedmont Section Research Committee under the able leadership of Luther Arnold. Subsequently, as chairman of the Research Committee activities, I was impressed with the resources for cooperative work between the people in the laboratories of the textile mills, the suppliers of dyes and chemicals, the textile colleges, and the primary fiber manufacturers. The quality of this Piedmont Section research is reflected in the achievement of four first prizes and one second prize during the last five years of competition in the Intersectional Contests. Even more important was the fact that each of these projects presented new information and new principles. R Lee Wayland's project on "Mechanism of Chlorine Damage," won the 1960 contest, involved 27 active individual participants and 16 laboratories.

At the national level, I participated in Ernest Kaswell's Long-Range Planning Committee and am currently vice chairman of George Wham's Technical Committee on Research, and am a member of Charles Sylvester's Executive Committee on Research. These two responsibilities, coupled with service as Councilor for the Piedmont Section, has exposed me to every facet of AATCC technical activities. Our Association is unique in that it is able to involve such a large number of individuals in voluntary, cooperative test methods development at the national level and in textile chemical research at the section level.

SOUTHERN UTILIZATION RESEARCH DEVELOPMENT DIVISION——Just as the commercial growth of Arnel triacetate brought me to Charlotte and to increased activity in AATCC, so did its successful use in combination with cotton result in my increased interest in the basic properties of the cotton fiber. This led to my participation in the National Cotton Council's yearly Conference on Chemical Finishing where, in 1959, I had the unique distinction, for a man-made fiber representative, to serve as a symposium chairman. The Textile Industry owes much to the National Cotton Council and to George Buck, Leonard Smith, and Nelson Getchell for this outstanding annual conference.

My active interest in cotton resulted in an invitation to serve as a collaborator to the Southern Utilization Research and Development Division of the Department of Agriculture, at New Orleans where, under Dr C H Fisher's direction, scores of competent fiber technologists, chemists, and physicists are investigating the chemical modification and resultant physical properties of cotton. Five years of participation in this program has exposed me to the revolution which has taken place in cotton fiber modification and leads me to the prediction that we are on the threshold of understanding and exploiting the full potential of this natural fiber.

My increased interest in chemical finishing problems of the Textile Industry resulted in the paper "Recent Developments in Chemical Finishing of Textiles" and led to an invitation to participate in the National Academy of Science Committee on Textile Functional Finishing. Serving on this Task Group with Henry Millson, Don Gagliardi, Ted Cooke, and Richard Steele, is in itself an educational experience.

The Gordon Research Conference on Textiles, during the last 10 years, has been a major source of stimulation to me in scientific thinking. In bringing together more than 100 of the most experienced research-minded men from many countries, every aspect of fiber science from polymer chemistry through dyeing and finish-

1961—The Fortess Family—Ethel, Fred, Janet and June. The minerals are from New Hampshire, collected during recent Gordon Research Conference on Textiles

Recent picture of Olney Medalist (on left) with coworkers William J Myles; Reiner G Stoll, director of applications & product development; George C Ward, and Victor S Salvin

ing are brought into sharp focus in one place. I had the great privilege of presenting the paper "Factors Influencing the Dyeing of Hydrophobic Fibers with Nonionic Dyes" at the 1957 Conference, and of serving as the chairman of the 1960 Conference. Our Industry and our Association owe a great debt of gratitude to George Parks, an AATCC vice president from the New England Region, for his vision and leadership as director of the Gordon Research Conferences.

NONTECHNICAL ACTIVITIES——Perhaps in the final analysis my greatest usefulness to society will be in the area of motivation of young men and women. My basic philosophy is that the physical and social sciences should have as their ultimate objective the enrichment of man's existence, and this has led me into a wide variety of community activities.

The Charlotte Children's Nature Museum, where I served as vice president and chairman of the Program Committee, permitted me the opportunity to organize science workshops, roundtable discussions, field trips, TV progams, all aimed at exposing young people from four to 18 years of age to the wonders of nature and science available in their immediate environment. Most important of all, it gave me the opportunity to involve many of my fellow scientists in a gratifying service to their community.

The science fairs have had a major impact on science teaching in many communities. As a member of the Executive Committee of the South Piedmont Science Fair, which includes 14 counties in the vicinity of Charlotte, and as a judge at many schools, I have been able to impress upon teachers and students alike, that science fair projects are firstly an experience in creative imagination and learning through research, and only secondly a competition for prizes.

Because Ethel and I have a high regard for the moral and ethical principles which a religious education could impart to our daughters, June and Janet, now ages 16 and 12 respectively, we became active in religious school work. I served as superintendent, ably assisted by my wife. I am currently chairman of the Adult Education Committee of Temple Beth El.

I have indulged in one major time-consuming hobby, that of mineral and fossil collecting. Fortunately, even in this I was able to fully involve Ethel and the children, so that this too is a family activity. From the first fossil-digging expedition in the Badlands of South Dakota, more than 22 years ago, until the present day, Ethel and I have explored many out-of-the-way places wherever we happen to live or vacation. We are charter members of the Charlotte Rock & Mineral Club, and are quite proud of the blue ribbon our exhibit of crystals and crystal classes won in local competition.

Perhaps the most surprising sidelight of my interest in mineralogy occurred when a New Jersey Section of the American Chemical Society asked me to come up from Charlotte to give a talk on "Mineralogy: Science and Hobby" instead of on textile chemistry.

EPILOGUE——The Textile Industry, through Celanese and the AATCC, has provided me with the opportunities for intensive creative and useful activities. The Olney Award is a milestone which gives me the assurance that I have taken the right path. But the road ahead is a long one and leads to many new areas of exploration. My greatest ambition is to travel this road and perhaps also to guide young scientists into this Promised Land of Achievement in Chemistry applied to Textiles.

* * *

The Olney Medal is a heavy cast piece bearing a likeness of Dr Louis Atwell Olney, founder of the AATCC, on the front, and a simple inscription on the reverse side.

Details of published works and professional qualifications of those proposed each year for the medal are usually contained in nominating briefs delivered to the Awards Committee. This Committee then considers those nominated and makes a final choice.

Under rules agreed to by the Association and Howes Publishing Co, Inc, the award must be made by unanimous decision of the committee of five, which includes: 1) the Association president (ex-officio); 2) a member of the faculty of an educational institution awarding chemical degrees; 3) an employee of a concern manufacturing chemical products used in textile wet processing; 4) an employee of a concern manufacturing textiles; 5) a member at large of the Association.

The present members of the Committee, and their terms of service from January, 1961, are 1) Elliott Morrill, ex officio; 5) Milton Harris, *chairman*, one year; 2) James L Taylor, two years; 3) Henry E Millson, three years; 4) Paul B Stam, four years. The executive secretary of AATCC is secretary of the Committee without vote. As the term of each selected member expires, the Committee itself elects a successor to serve four years.

Previous winners of the Olney Medal are:

1944—Louis A Olney
1945—Milton Harris
1946—William H Cady
1947—Edward R Schwarz
1948—Harold M Chase
1949—Charles A Seibert
1950—George L Royer
1951—Raymond W Jacoby
1952—Werner von Bergen
1953—Roland E Derby
1954—William D Appel
1955—Miles A Dahlen
1956—Walter J Hamburger
1957—P J Wood
1958—Henry E Millson
1959—Emery I Valko
1960—Arnold M Sookne

THE OLNEY MEDAL

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"The Monforts Reactor—A Versatile Continuous Dyeing Machine for Synthetic Fiber Fabrics"—Fred Fortess, James E Torbet, George C Ward, and Joseph S Warner, *Am Dyestuff Reptr 50*, No. 2, 35-40, January 23, 1960.

"Factors Influencing the Dyeing of Acetate Fibers with Disperse Nonionic Dyes"—Fred Fortess and V S Salvin, *Textile Research J* 27, No. 12, December, 1958.

"Factors Influencing the Dyeing of Hydrophobic Fibers with Nonionic (Disperse) Dyes"—Fred Fortess. Presented before the Textile Sections of the Gordon Research Conferences, 1957.

"Recent Developments in the Chemical Finishing of Textiles"—Fred Fortess, *Am Dyestuff Reptr 47*, No. 15, P513-22, July 28, 1958.

"Recent Developments in Chemistry Applied to the Textile Industry"—Fred Fortess. Presented before High School Science Teachers of Charlotte, NC, March 1957.

"Creative Opportunites in Textile Chemistry"—Fred Fortess. Presented before the Clemson College, North Carolina State College, and Philadelphia College of Textiles and Science Student Chapters of AATCC.

"Finishing Semisynthetic Fiber Fabrics"—Fred Fortess. Presented before the Lackawanna Subsection, North Jersey Section, American Chemical Society.

"Arnel 1956"—Fred Fortess. Presented before the Philadelphia Section, AATCC, at the Drake Hotel, Philadelphia, Pa, January 13, 1956.

"The Pleating and Embossing Properties of Triacetate Fabrics and the Printing of Triacetate Fabrics"—Fred Fortess, *SVF Fachorg Textilver 11*, No. 5, May, 1956.

"Dyeing, Finishing, and Heat-treating Arnel Triacetate"—Fred Fortess, *Am Dyestuff Reptr* 44, No. 16, P524-37, August 1, 1955. (1956 ADR Award Winner).

"Silicone Resins in Textiles"—Fred Fortess, *Ind Eng Chem* 46, Nov 1954.

"Application of Silicone Resins to Fabrics"—Fred Fortess, *Can Textile J*, December 31, 1954.

"Improved Washfastness of Acetate-Rayon Blends"—Fred Fortess, V S Salvin, A B Conciatori, R A Walker, and G C Ward, *Am Dyestuff Reptr 41*, No. 23, P764-70, November 8, 1954.

"Acetate Blends of Improved Performance"—Fred Fortess, B S Sprague, and R G Stoll, *ibid* 42, No. 25, P851-64, December 7, 1953.

"Silicone Resins"—Fred Fortess and Paul Duggan, *Modern Textiles*, March 1953.

"Factors Influencing the Soiling of Acetate Carpets"—Fred Fortess and Charles E Kip, *Am Dyestuff Reptr* 42, No. 12, 349-59 (June 8, 1953).

"Dyeing, Finishing of Fabrics Containing Acetate Filament and/or Staple Fiber"—Fred Fortess and G C Ward. The Third Canadian Textile Seminar, Queen's Univ, Kingston, Ont, September 1952.

"The Interaction of Various Organic Liquids with Cellulose Acetate Fibers as Detected by Specific-gravity Measurements"—Fred Fortess, *Textile Research J* 19, No. 1 (January 1949).

"Ions of Europium Distributed between Different Configurations in Homogeneous Solutions"—Fred Fortess, Simon Freed, S J Weissman, and H F Jacobson, *J Chem Phys* 7 (September 1939).

"Dyeing Hydrophobic Fibers"—Fred Fortess. Presented at the Textile Research Institute Seminar, Spring 1959.

"Dyeing, Finishing and Heat Treatment of Arnel"—Fred Fortess, *Modern Textiles* (December 1955).

PARTICIPATED IN PIEDMONT SECTION RESEARCH PROJECTS:

Effect of Resin Finishes on Lightfastness of Vat Dyes, 1956

Relation of the Effect of Resins on Light Fading and the Tendering Action of Photosensitive Vat Dyes, 1957

The Effect of Thermal Treatments on the Dyeability of Thermoplastic Yarns, 1958

Accelerant Dyeing of Hydrophobic Fibers—Principles and Mechanisms, 1959

Chemical Mechanisms in Chlorine Retention by Resin-treated Cotton Fabrics, 1960

PATENTS

USP 2,444,538	The Production of Butadiene and Catalyst Therefor (with Geo W Seymour)
USP 2,532,400	Sizing Compositions (with M Duke)
USP 2,547,920	Fusion of Vanillin (with B B White)
USP 2,564,768	Yarn Lubricant (with Geo W Seymour and M Duke)
USP 2,572,128	Concentration of Organic Acids (with A J Rosenthal and B B White)
USP 2,603,637	Preparation of Organic Acid Esters of Cellulose (with Peter Blackman and B B White)
USP 2,676,152	Concentrated Aqueous Soap Solution of Low Viscosity (with Seth T Bowen)
USP 2,676,924	Textile Lubricant (with Conrad Hohing Jr)
USP 2,676,975	Process for Production of Phosphate Esters (with Conrad Hohing Jr and Joseph Rio)
USP 2,684,311	Process for Lubricating Regenerated Cellulose Yarns.
USP 2,689,817	Propionic Acid from Wood Pulp Waste Liquor (with B B White)
USP 2,693,432	Glazing Batting Materials
USP 2,727,860	Textile Lubricants (with M Duke and C Hohing Jr)
USP 2,730,498	Textile Lubricants (with C Hohing Jr)
USP 2,731,368	Treatment of Textile Materials (with M Duke)
USP 2,769,727	Sizing and Drying of Filamentary Material (with S T Bowen)
USP 2,805,992	Textile Conditioning Agent (with C Hohing and C E Kip)
USP 2,853,451	Lubricating Agents (with C Hohing Jr and C E Kip)
USP 2,880,050	Butyl Benzoate as a Dyeing Assistant (with J Rudy)
USP 2,880,052	Dyeing Cellulose Derivatives and Aftertreating for Improved Washfastness (with A B Conciatori and V S Salvin)
USP 2,892,668	Coloring of Cellulose—Cellulose Triacetate Textiles (with W A Schoeneberg)
USP 2,892,672	Inhibition of Gas Fading in Colored Cellulose Triacetate (with A B Conciatori and J L Rosen)
USP 2,954,269	Process for the Production of Patterned Tone-on-Tone Effects on a Thermoplastic Material (with F Best)
USP 2,982,597	Textile Treating (with B S Sprague and V S Salvin)

Abstract of the 1961 Olney Medalist's Address———

A CHALLENGE TO SCIENTIFIC INVESTIGATION IN THE TEXTILE INDUSTRY: TEN AREAS OF OPPORTUNITY

If there were a director of research for the textile industry, which of the many major problem areas would he select for long-range investigation?

This presentation will analyze a cross section of the technical problems of the textile industry which, in its broadest sense, includes the supplier of dyes and chemicals, the producer of man-made fibers, the fiber and fabric processor, as well as the garment manufacturer. However, emphasis will be placed on the special role of the dyer and finisher.

Although there are now available more than a score of natural and man-made fibers of widely different physical and chemical properties, every important fabric prepared from these fibers requires special dyeing, chemical, thermal or mechanical treatment in the dyehouse. These changes in fabric properties have as their objectives the improvement of both functional and aesthetic characteristics, either through the enhancement of desirable fiber properties or are aimed at the correction of shortcomings in either the fiber or fabric performance.

Will our research director consider the revolutionary changes which have occurred in our social and economic pattern of living which are creating ever-increasing leisure time interest in "ease-of-care" performance and, therefore, will he give emphasis to the development of new fiber-forming polymers which are inherently more "ease-of-care"? Will he consider the vast existing capacity for the nautral fibers, cotton and wool, and the synthetic fibers, rayon and acetate, and therefore emphasize research which will make possible more intensive exploitation of these available lower-cost fibers?

The ten areas which have been selected for discussion are not necessarily the most important, but do illustrate the variety and complexity of the problems confronting the textile industry.

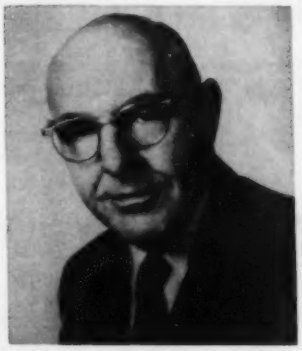
1) What additional information must we have concerning the fine structure of the cotton fiber in order to insure optimum fabric performance as a result of chemical and mechanical modifications?
2) Will wool gradually lose its important position as a textile fiber, or can it remain a vital factor in textile applications through more effective exploitation of its intrinsic properties by chemical or mechanical modification, and by better engineering design of blends with synthetic fibers which supplement and enhance wool's natural desirable properties?
3) How must we increase our knowledge of the nature of, and the interactions between, the internal molecular and structural elements of man-made polymers as related to the behavior of resultant fibers and fabrics in dyeing, thermal and chemical modification in the dyehouse, and performance in service as garments?
4) What are the most exact mechanisms by which cellulosic fibers are chemically modified resulting in improved dry and wet performance with minimum strength loss?
5) What do we know about the soiling of textile materials in service, and about soil retention and removal in cleaning, and will it be possible to develop anti-soiling chemical treatments?
6) Are we ready to treat textile fibers as engineering materials for the design of optimally performing blended fabrics with versatile color-styling potential?
7) What are the mechanisms by which dyes degrade on exposure to light and atmospheric chemical contaminants, and how can we inhibit each of these reactions?
8) What is the mechanism of dyeing hydrophobic fibers with disperse nonionic dyes?
9) How can we characterize sensory and aesthetic qualities such as hand, drape, luster, and comfort?
10) What factors must be considered in predicting the potential commercial success of a new or a modified textile fiber?

THIRD HAROLD C CHAPIN AWARD TO ARTHUR R THOMPSON

ARTHUR R THOMPSON, recently retired from Ciba Co, Inc, has been named by the Association to receive the Harold C Chapin Award. The presentation will be made at the Association's National Convention at the Statler-Hilton Hotel, Buffalo, NY, at the Awards Luncheon on September 28th.

The award is presented to a Senior member, with membership of twenty years or more, who has contributed to the attainment of the objects for which the Association was founded. Mr Thompson is the third recipient of the award. In 1960, it was made to Leonard S Little, and the year before to Harold C Chapin, in whose honor it was established.

Mr Thompson has been active in Association affairs since its founding in 1921. Too young to become a Charter Member, he was associated with Louis A Olney, AATCC founder, while a student at the Lowell Technological Institute. He was active in organizing the Piedmont Section and held office as Councilor, chairman, secretary and custodian. He was instrumental in establishing the Charles H Stone Scholarship Fund, which sponsors annually worthy students in the area. He was a member of the Research Committee, predecessor of the Executive Committee on Research, from 1932-1941. Mr Thompson served as vice president of AATCC from 1934-1936 and 1938-1940. In 1959, the Council appointed him to the office of treasurer. Following his retirement from Ciba early this year, Mr Thompson is relinquishing the treasurership.



He is widely known as a raconteur and for his professional skill as a magician. Mr and Mrs Thompson have recently returned from a five-months trip around the world. He resides at 2132 Dilworth Road, East, Charlotte, NC.

The recipient of the Award is selected by a committee comprised of a representative of each of the four AATCC regions and the president of the Association. Sidney Springer president of Sidney Springer Co, Inc, Los Angeles, Calif, served as chairman of the committee which selected Mr Thompson for the Award.

PROGRAM OF ENTERTAINMENT TO FOLLOW BANQUET

AN evening of variety will follow the Annual Banquet to be held September 28 in the Statler-Hilton Ballroom.

The entertainment, arranged by Jack Morton Productions, Inc, will be provided by Patricia and Norton, Lorraine Wilson, Jimmy Nelson, and Alan Black.

A unique dance team, Patricia and Norton have appeared in many supper clubs in the East and have just completed a successful tour of the Midwest. Their talents promise to lend sophistication, comedy, and excitement to the evening.

Lorraine Wilson, an attractive singer from show business, brings a varied background to the evening's entertainment, having entertained in the Empire Room at the Waldorf-Astoria as well as having been a soprano soloist with the Boston Pops Orchestra.

Evoking his share of the evening's laughter will be the young ventriloquist, Jimmy Nelson, aided by his engaging "dummy pals", Danny O'Day, Humphrey Higsbye, and Farfel. Jimmy Nelson is well known for his television appearances and the series of commercials he did on the Milton Berle Show.

Alan Black, conductor, composer and harmonica virtuoso, originated music for the Pulitzer Prize play "Time of Your Life," and wrote background music for the movie, "Portrait of Jennie." He has appeared in a number of television shows, concerts, theaters, and night clubs, and is currently heard on Columbia and Epic records.

Lorraine Wilson

Alan Black

Lorraine Wilson

Jimmy Nelson, Farfel, Danny O'Day and Humphrey Higsbye

Patrica and Norton

CHAIRMEN—STANDING COMMITTEES OF THE COUNCIL

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Chairman
Executive Committee of the Council

CHARLES A SYLVESTER
Chairman
Executive Committee on Research

GEORGE S WHAM
Chairman
Technical Committee on Research

THOMAS R SMITH
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W GEORGE PARKS
Chairman
Membership and Local Sections

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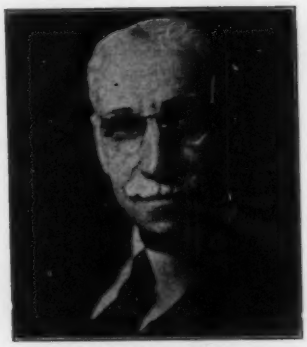
MATTHEW J BABEY
Chairman
Subject & Speakers' Bureau

FOUNDER

LOUIS A OLNEY

PAST PRESIDENTS

(An asterisk follows the names of the deceased)

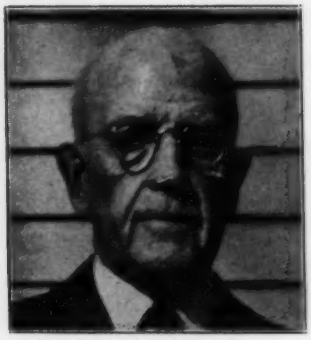


LOUIS A OLNEY*
1922-1927

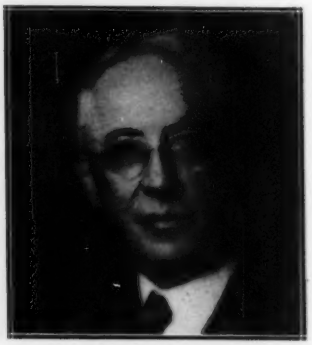
ELVIN H KILLHEFFER
1928-1930

P J WOOD
1931-1932

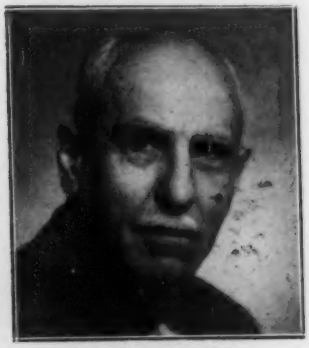
ROBERT E ROSE*
1933-1935



WILLIAM H CADY
1936-1937

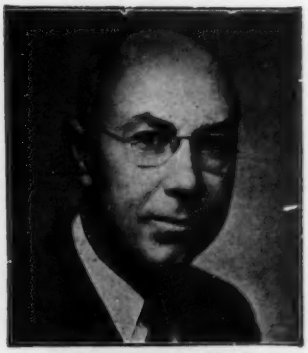


ALBAN EAVENSON*
1938-1939



CARL Z DRAVES
1940-1941

THOMAS R SMITH
1942-1943



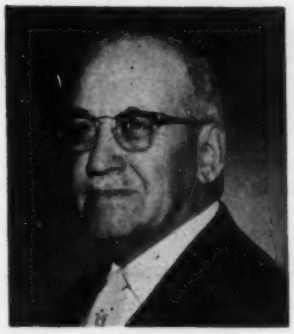
WILLIAM D APPEL
1944-1946

HENRY F HERRMANN
1947-1949

C NORRIS RABOLD
1950-1952

J ROBERT BONNAR
1953-1954

RAYMOND W JACOBY*
1955-1956



GEORGE O LINBERG
1957-1958

WELDON G HELMUS
1959-1960

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HAROLD C CHAPIN
Past Secretary
Honorary Member

WILLIAM R MOORHOUSE
Treasurer Emeritus
Honorary Member

ALBERT E SAMPSON
Past Treasurer
Honorary Member

Membership Applications

August 17-30, 1961

NEW ENGLAND REGION

Rhode Island Section

Senior

Raymond E Horbert—Color shop foreman, Cranston Print Works Co, Cranston, RI. Sponsors: H F Kilguss, E S Johnson.

George A Nichols Sr—Supt of bleaching, Danielson Finishing Co, Danielson, Conn. Sponsors: J F Brennan, J F Ritchie.

CENTRAL ATLANTIC REGION

Delaware Valley Section

Senior

Robert C Britt—Senior dev chemist, Atlas Chem Ind Inc, Wilmington, Del. Sponsors: R A Olney, E C Sherburne.

Metropolitan Section

Senior

Peter C Canovai Jr—Chemist, Textile technical service, Onyx Chem Corp, Jersey City, NJ. Sponsors: R E Kimble, J Niewaroski.

Emile B Nava—American rep of Triatex (textile research and dev), Zurich, Switzerland, and Stoffel Co Inc, New York, NY. Sponsors: G P Paine, G J Mandikos.

David E Marshall — Industrial chemist, Tanatex Chemical Corp, Kearny, NJ. Sponsors: A Dabal, C Brdlik.

Associate

David G Sawyer—Dist mgr, *Textile World*, McGraw-Hill Publishing Co, New York, NY.

Transfer to Junior

Philip N Jacobs—Trainee, technical service lab, Geigy Dyestuffs, Div of Geigy Chem Corp, Ardsley, NY. Sponsors: R C Allison, J A Leddy.

SOUTHERN REGION

Northern Piedmont Section

Junior

Joseph V Huff—Research lab technician, Collins & Aikman Corp, Ca-Vel, NC. Sponsors: G A Heath, J B Corinth.

Palmetto Section

Junior

William B Uhler II—Technical sales, Blackman-Uhler Chem Co, Spartanburg, SC. Sponsors: E R Roper, P C Blackman.

South Central Section

Junior

Morris O Brock—Dyehouse technician, The Chemstrand Corp, Decatur, Ala. Sponsors: W Stump, R C Sharpe.

Southeastern Section

Senior

David E Gordon—Research chemists, Callaway Mills Co, LaGrange, Ga. Sponsors: D T Thompson, C F Coleman.

William P Hart—Sales, Berkshire Color & Chemical Co, Charlotte, NC. Sponsors: A F Beane, T J Ratajczak.

Junior

Thomas W Cunningham — Shift dyer, Callaway Mills Co, LaGrange, Ga. Sponsors: J A Parker, W B Amos.

Associate

Edmund M Gibbon — Salesman, textile division, National Starch & Chemical Corp, Atlanta, Ga.

Washington Section

Senior

Joyce L Beckett—Chemist, Harris Research Labs, Washington, DC. Sponsors: V C Jackson, A E Davis.

Roland L Lee—Chief, textiles division, United States Tariff Commission, Washington, DC. Sponsors: R M Gregg, R L Ward.

Irene I-Ling Mao—Chemist, Harris Research Labs Inc, Washington, DC. Sponsors: V C Jackson, A E Davis.

Mary S Schur—Textile chemist, Harris Research Labs Inc, Washington, DC. Sponsors: V C Jackson, A E Davis.

Junior

Ina M Conner—Chemist tech, Harris Research Labs Inc, Washington, DC. Sponsors: V C Jackson, A E Davis.

Barbara Ann Feldman — Textile technologist, Harris Research Labs Inc, Washington, DC. Sponsors: D P Gush, F W Minor.

AT LARGE

Associate

Leroy Whitaker—Market development, Jefferson Chemical Co, Inc, Houston, Texas.

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks may be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

61-18

Education: BS, chemistry
Position desired: Technical sales, sales, wool and worsted finishing, laboratory—dye
Location: Eastern part of country preferred; anywhere acceptable
Age: 44; single; excellent references and resume

9-18,10-2

AATCC Calendar

COUNCIL; NATIONAL COMMITTEES
Sept 27 (Statler Hotel, Buffalo, NY); Council (8 PM)
Oct 26-27 (Sheraton Hotel, Philadelphia, Pa); TCR, research and administrative committees
Nov 17 (Hotel Sherman, Chicago, Ill); Council and Annual Meeting (2 PM)
Jan 26 (Hotel Commodore, New York, NY); Council (10 AM)
Apr 12-13 (Francis Marion Hotel, Charleston, SC); Council, administrative and research committees

NATIONAL CONVENTIONS
Sept 27-29, 1961 (Hotel Statler, Buffalo NY); Nov 14-17, 1962 (Atlanta Biltmore Hotel, Atlanta, Ga); Oct 30-Nov 2, 1963 (Boston, Mass); Oct 1-3, 1964 (Hotel Statler, New York, NY); Oct 14-16, 1965 (Conrad Hilton Hotel, Chicago, Ill); 1966 (Philadelphia, Pa)

DELAWARE VALLEY SECTION
Oct 27, Dec 1 (Beck's Restaurant, Philadelphia, Pa)

HUDSON-MOHAWK SECTION
Oct 13 (Albany—General Aniline Tour); Nov 17 (Albany—Nopco, Fiber Lubricants); Jan 12(Amsterdam—Monforts Reactor and the Jet Dyeing Machine); Mar 9 (Amsterdam—Water Repellents, 3M); May 25 (Albany—Historical Aspects of Dyeing); June 22 (Amsterdam—Annual Outing)

METROPOLITAN SECTION
Oct 20 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Cellulosic Reactants", panel); Nov 17 (Shell Labs, Union, NJ—"Radioactive Tracers"); Jan 19 (New York, NY—"Costs", D M Lewis, Colonial Piece Dye Works); Feb 16 (New York, NY—"Unifog Process"); April 13 (Ladies Night); May 18 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Nonwovens—Dyeing and Finishing", panel); June (Outing)

MID-WEST SECTION
Nov 18 (Chicago, Ill)

NORTHERN NEW ENGLAND SECTION
Oct 20 (Quartermaster R & E Command, Natick, Mass); Dec 18 (Motel 128, Dedham, Mass); Jan 19 (Woodlawn Country Club, Newton, Mass)

NORTHERN PIEDMONT SECTION
Oct 7 (Hotel Roanoke, Roanoke, Va)

PACIFIC NORTHWEST SECTION
Nov 10 (business meeting)

PACIFIC SOUTHWEST SECTION
Oct 7-8 (Annual Outing, Rancho Santa Fe, Calif;) Nov 17

PALMETTO SECTION
Jan 20-21 (Poinsett Hotel, Greenville, SC); April 14-15, 1962 (Francis Marion Hotel, Charleston, SC)

PIEDMONT SECTION
Sept 23 (Hotel Barringer, Charlotte, NC); Jan 27 (Hotel Charlotte, Charlotte, NC); Apr 7 (Hotel Barringer, Charlotte, NC); June 8-9 (1962 Outing—Mayview Manor, Blowing Rock, NC); Sept 29, 1962 (Hotel Barringer, Charlotte, NC)

RHODE ISLAND SECTION
Oct 17 (Dinner Meeting); Dec 1 (Annual Business Meeting)

SOUTHEASTERN SECTION
Nov 25 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Oct 27 (Annual Meeting); Dec 1 (Shelton, Conn)

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Ceramic Fibers: Uses of Aluminum Silicate

Walworth, C B, *Fibres & Plastics* 23, 170-3, June, 1961

Traditional inorganic fibers such as glass, mineral wool and asbestos provide excellent service at temperatures up to 1000°F. Exposure above this temperature seriously degrades these materials. Aluminum silicate fibers are primarily intended to serve in similar types of applications at temperatures ranging from 1000° to 2300°F, ie, in the range between previously available inorganic fibers and insulating refractories.

Aluminum silicate fibers are produced either as short staple or as long staple, textile grade fibers. The long staple fibers may be fine, medium coarse, or coarse to suit individual uses.

Short staple fibers are produced by passing a stream of molten aluminum oxide and silica (1:1 ratio), containing also small quantities of sodium and boron to help control the melt, into a high-velocity air or steam jet. The jet disintegrates the stream into very fine particles or droplets and attenuates these droplets into fine fibers as they cool rapidly. The fibers are carried away by suction and collected for processing.

Long staple fibers of controlled diameters are produced by a recently developed process in which small quantities of zirconia are added to control the melt.

Aluminum silicate fiber has a melting point of over 3000°F and a maximum use temperature of 2300°F. When exposed to temperatures in excess of 2000°F for long periods of time, the material undergoes devitrification and becomes more brittle, lower in tensile strength and more easily abraded.

The fiber is prefabricated in a variety of standard shapes for specific end-uses, ie, staple fiber, bulk fiber, batts, paper, blankets and other textiles, and molded shapes.

Aluminum silicate fiber in bulk form is used for high-temperature insulation, eg, in jet engines and brazing furnaces. Long staple fibers are used to filter gases in the 1400°F range.

Batts are used in air conveyors, when conveying extremely hot materials, and are currently being evaluated as acoustic insulation for jet engines.

Paper made from aluminum silicate fiber is used for filters, gaskets, high-temperature linings, and electrical applications.

Blankets, made from long staple fibers, find uses in furnaces and turbine exhaust lines. In conjunction with glass fibers and asbestos materials, the blankets are used to reduce the temperature to a safe range for the glass and asbestos.

Potential future applications of the aluminum silicate fibers are in smog control (by permitting higher temperatures in incinerators), filtration of radioactive particles, in rockets and guided missiles, and in manufacturing fireproof safes and other office equipment.

●

New Fiber Developments

Coke, C E, *Can Textile J* 78, 39-44, June 9, 1961

The author reviews the development of the man-made fiber industry, commencing with nitrocellulose in 1898. He also discusses the structure of man-made fibers, and shows how they are formed from long-chain molecules which are polymers of organic compounds.

He then examines, by generic classes, the current status of the present man-made fibers, and tries to picture in what direction they may move in the future.

Cellulosic. Quite recently, two new classes of fibers have made their appearance: a) a crimped staple fiber in which cross-linking is obtained, and which has slightly improved dimensional stability and a permanent crimp; b) a high wet-modulus fiber which combines most of the desirable properties of cotton and viscose rayon and essentially eliminates the "shortcomings" of both. It is predicted that future cellulosic fiber production will be largely concentrated in these two classes.

Cellulose Acetate. A recent modification gives a fiber with definitely improved strength. A continued slow growth is predicted.

Polyamide. Nylon still leads all the other synthetics in world consumption. It is available in three types: 6, 6.6, and 11. Type 11 is made in France. Types 7 and 12 are also currently under investigation. "Continued growth of nylon is assured."

Polyester. These fibers rank third in world consumption. The finer deniers are used in blends with cellulosic fibers and the coarser deniers in blends with wool. This fiber has made possible "a new level of automatic 'wash-and-wear' performance," the author says.

Acrylic. These fibers rank second. They produce bulk with a minimum of weight, and have a soft wool-like hand. At present their end-use is limited to a few areas such as knitwear, carpets, blankets and slacks, but their future "is assured".

Glass. Production and consumption of this fiber are growing rapidly. Its end-use application is mainly in the industrial field, the author says.

Modacrylic, Saran, Vinal, Nytril, and Vinyon. It is hard for the average textile mill man to "explain the subtle differences" in performance characteristics of these various fibers. Plans to produce Vinal in the U S were recently postponed, and development work on a nytril fiber has been transferred to Germany, according to the author.

Polypropylene. The high strength, low sp gr and low cost of this fiber have aroused considerable interest. Difficulty in dyeing is a serious problem. Anticipated end-uses are in the apparel, drapery, upholstery and carpeting fields.

Metallic. The future of these yarns, which are made in several ways, depends on "the whims of fashion".

Spandex. This is an elastic fiber, said to be superior to conventional rubber yarn and to be dyeable. So far it has been applied mainly in the foundation garment area, but it will have other end-uses where elastic yarns are employed.

Thirteen references to the literature are cited.

●

The Evolution of Disperse Dyes and Their Application to Hydrophobic Fibers

Baldwinson, T M, *J Soc Dyers & Col* 77, 246-51, June 1961

The author mentions first the introduction of cellulose acetate fibers by the Dreyfus Brothers, just after World War I; the unsuccessful attempts to dye them with the then available dyes (direct, acid, basic); and the discovery that they could be dyed with fine aqueous dispersions of certain water-insoluble azo and anthraquinone dyes.

He next discusses the various methods of using these dispersions, not only on cellulose acetate but on other hydrophobic fibers. In all there are five important methods of applying these dyes.

Direct dyeing. In this method the dyebath contains only the dye and the necessary amount of dispersing agent (eg, soap). This method is eminently suitable for secondary cellulose acetate and nylon, and for light to medium depths on cellulose triacetate (eg, Tricel) and acrylic fibers (eg, Orlon 42, Courtelle, Acrilan). Secondary acetate is dyed at 80°C; triacetate and the synthetics, near the boil.

Some of the disperse dyes (eg, anthraquinone blues) are sensitive to burnt gas fumes on cellulose acetate and require the addition of an inhibitor. Disperse-dyed nylon, however, is not generally sensitive to these fumes.

Carrier dyeing. Some fibers, notably triacetate, and also polyesters (eg, Terylene) are capable of absorbing disperse dyes, but the rate of dyeing is too slow. It can be increased by the addition to the dyebath of a "carrier" (eg, *o-phenylphenol*).

High-temperature dyeing. Many carriers have an adverse effect on the lightfastness of disperse dyes on Terylene. This made it necessary to find still another method of dyeing this fiber, ie, at temperatures above 100°C. Special dyeing machines are required for this method, but it seems to be gaining in popularity, according to the author.

Solvent-assisted dyeing. Another way of speeding up the time of dyeing is by addition to the dyebath of a solvent (eg, benzyl or butyl alcohol). This method works well with all the hydrophobic fibers except secondary acetate. Commercially it is said to be restricted to Terylene, Tricel, and the acrylics. Its principal disadvantages is the extra expense of the solvent.

Pad-dyeing. This method consists of padding the dye, thickened with sodium alginate, drying, and fixing the dye by heat (200°C). It is said to be suitable for Tricel, Terylene, and nylon, but accurate matchings are difficult.

Eighteen references to the literature are cited.

●

The Interaction of Coating Material and Base Fabric Structures

Burr, F K, *Can Textile J 78*, 58, 61-3, April 14, 1961

The author reviews some of the attributes of coatings for particular end uses.

Rug and carpet backings, he says, became a large and valuable consumer of coating materials even before the advent of tufted rugs. The purpose of applying backing to woven carpeting served several purposes: for example, with cut pile constructions the loss of pile was prevented, and additionally the back of the rug was made nonskid. The base structure of the rug was also protected from the abrasive action of dirt and grime.

Regarding tufted rugs, which now are said to have over 60 percent of the market, the author states that they probably could not exist were it not for the pile-binding powers of back-coatings.

In the upholstery field the use of back-coatings has become almost universal. This development started in the automobile field; application of a coating to the back of the fabric made it more "manageable" on the pattern cutting table.

Coating materials are also used as binders to reinforce so-called "nonwoven" fabrics, which to a large degree depend on the adhesive properties of such reinforcement.

The author discusses at considerable length the effect of coatings on the mechanical properties of a fabric which are important for its end use, particularly its tear strength.

In an uncoated fabric the principal factors affecting tear strength are the yarn's tensile strength and the number of yarns in the tear area. Here we have to consider not only the mobility of the yarns in the fabric and their ability to shift under stress but also their elastic properties.

In order to coat a fabric without severe loss of tear strength it is necessary 1) to avoid brittle films that would reduce the mobility of the yarns; 2) to avoid too deep penetration of coating materials which would "spot-weld" the yarns at the crossovers, thus again limiting their mobility; 3) to engineer the coating formulas and their application to provide the optimum conditions which will overcome the disadvantages mentioned in 1) and 2).

Changes in the fabric's construction are also helpful; eg, the tear strength can be greatly increased by changing from a plain weave to a twill, or better, to a 2 × 2 basket weave.

Scouring and/or bleaching of fabrics prior to coating may cause a tremendous lsss in tear strength, the author says, by removing the natural waxes and lubricants present in the loom-finished goods.

Addition of a plasticizer to the coating material will increase the tear strength of the fabric by making the coating softer and more extensible.

●

Key Controls in Shrinking Wool

Anon, *Textile World 111*, Fact File Issue, Mid-July, 1961, p. 154-5

The primary cause of shrinkage in woolen fabrics or yarn is the tendency of wool fibers to felt. The most effective method of reducing wool shrinkage lies in removing the scaly surface of the fiber by oxidation with acidic solutions of chlorine. But the reaction is extremely rapid at low pH and relatively ineffective at high pH, so a buffer must be used.

There are three basic processes of chlorination that have been successful. Two of these are called dry processes. In one, gaseous chlorine is applied to damp wool in a closed chamber. The other dry process depends on solvents that carry chlorine-bearing chemicals to the wool. This latter method also requires a closed system for the reaction, and the solvent must be recovered for economic reasons.

A number of patented processes have been developed for producing low-shrinkage wool. These include the Stevenson-B process, which uses a combination of hypochlorite and permanganate, and the Lanfix process, which employs copper salts and H_2O_2. Also in use are processes that depend on alcoholic potash, enzymes, latices, resins, and cross-linking reactions with epoxy compounds and aldehydes.

By far the simplest method is to treat the wool in ordinary dyehouse equipment with a suitably buffered solution of chlorine (eg, sodium hypochlorite.

The ideal chlorinating solution must be so balanced that it does its work quickly and affects only the scaly surface of the fiber as evenly as possible. This type of reaction is brought about, the author says, by adding a chlorine "acceptor" to the chlorinating bath. The acceptor combines with the chlorine to form chloramines, which in turn decompose and release the chlorine to the wool. The reaction is thus slowed down.

A basic formulation for the chlorine treatment is given in which Chloregal D (Geigy) is used as the acceptor. The chlorination bath is maintained at pH 3, and the wool is treated for one hour at 50-68°F. An antichlor treatment with sodium bisulfite follows.

Wool to be dyed should be neutralized after antichloring in a fresh bath containing 3-4% ammonia and 2-3% H_2O_2.

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ADR News Report:

General News of the Industry
Personalities in the News
New Products, Developments, Processes

Fenton, Helmus, Sizer Form Partnership

George A Fenton, Weldon G Helmus and Winston Sizer have formed a partnership to be known as Fabric Associates, with offices at 15 Exchange Place, Jersey City 2, NJ.

The organization is said to represent over 100 years of experience in textiles, including yarns, fabrics and finishing. All have had executive backgrounds in manufacturing, sales and marketing in both domestic and export fields.

Fabric Associates was formed to act as a special representative for the Woven Goods Division of Sackner Products Inc, Grand Rapids, Mich, pioneer in the production of paper textiles, which has recently broadened its lines to include many natural and man-made fibers. New products currently include those for the decorative trades and for many industrial end uses.

Sackner has been, for over 25 years, a major supplier to the furniture and automotive industries—making braided, twisted, shaped, laminated, molded, coated, die cut, woven and nonwoven fiber products. Plans are also proceeding for the development of knit goods production.

●

Carbide Integrates Research and Development at South Charleston

Union Carbide Chemicals Co has formed an integrated Research and Development Department at its Technical Center in South Charleston, W Va, "to more effectively carry the increasing demands for these interrelated activities."

The new department reportedly has been established in recognition of the role the development of new products and new technologies will play in the growth of the Company. The appointment of three directors has been announced: Franklin Johnston, director, research and development—special projects; John W Biddle, director, research and development—polymer chemistry; Benjamin Phillips, director, research and development—organic chemistry. Lawrence W Newton will serve as assistant to T R Miller, vice president, research and development, in the entire research and development organization.

Under the new organization, each director will be responsible for development of new products, new use technology and new processes and the improvement of existing processes in his assigned area.

Dr Johnston joined Carbide in 1933 and previous to his new assignment served as director of research.

Mr Biddle has been with Carbide since 1937 and prior to his new assignment was director of development.

Dr Phillips has been active in research at Carbide since 1941 and was previously associate director of research.

Dr Newton has been associated with research at Carbide since 1941, initially at South Charleston and more recently in New York where he has been assistant to the vice president—research and development.

●

"Patent No. 2,985,501"

"Patent No. 2,985,501" is the title of the new training film presented by Deering Milliken Research Corporation to tell the story of Belfast cotton.

The 35-mm film strip with sound was prepared to augment the training on Belfast cotton that is done in the stores by the Milliken merchandising consultants. Because the running time of the film is approximately seven minutes, it allows time for a question-and-answer period and to acquaint store personnel with the merchandise of Belfast cotton that is available in their store.

The film has a broad interest range suitable for home economics classes as well as commercial use. It describes the cotton fiber itself from its construction to what causes a "wrinkle". Explaining the different methods that have been employed in "wash-and-wear" fabrics, it finally describes the chemical modification of Belfast cotton.

Portions of the film were photographed at the Deering Milliken Research Corp in Spartanburg, SC, to show the quality-control methods that have been set up to maintain performance of this "wash-and-wear" cotton.

ASA Publishes Two Revised Standards

Colorfastness to peroxide bleaching and the resistance of textiles to mildew and rot and evaluation of textile fungicides are subjects of two revised American Standards approved and published by the American Standards Association.

Specified in "American Standard Colorfastness to Peroxide Bleaching (AATCC 29-1957), L14.58-1960" are methods of test, specimens, procedure and apparatus for evaluating resistance of cotton and linen textiles (containing both colored and uncolored parts) subjected to action of hydrogen peroxide bleaching. The standard updates the procedures specified in an American Standard approved in 1956.

Procedures for determining the behavior of textiles with respect to mildew and the evaluation of mildew preventatives available to the textile trade are offered in "American Standard Resistance of Textiles to Mildew and Rot, and Evaluation of Textile Fungicides (AATCC 30-1957), L14.55-1960."

Both the American Association of Textile Chemists and Colorists and the American Society for Testing Materials are administrative sponsors of the project. Copies of the standards are available from the American Standards Association, Dept P 250, 10 East 40th Street, New York 16, NY. American Standard L14.58-1960 sells for 40 cents a copy while L14.55-1960 is available for 50 cents.

●

Eppenbach Div Appoints Midnorthern Agent

The C C Day Co, Minneapolis equipment sales organization, has been appointed as general sales agents for the Eppenbach Division of the Gifford-Wood Co.

The Eppenbach Division manufactures homogenizing, emulsifying and dispersing equipment and also offers a custom engineering service and systems for specialized or unusual installations.

The agency will serve present and prospective users in North and South Dakota, Minnesota and northern Wisconsin. The general sales office of the Day company is located at 1152 Plymouth Building, Minneapolis, Minn, under the management of Chester D Day. The general offices and manufacturing plant of the Gifford-Wood company are located in Hudson, NY.

●

Pleasant Valley Finishing to Supply Dura Beau Finish on All Applicable Fabrics

Pleasant Valley Finishing Co, Pleasant Valley, NY, will soon publicly announce its position as the first plant in the United States to supply the Dura Beau finish on all applicable fabrics processed at the plant. This statement was made August 31 by Joseph W Snyder, president of the finishing company, at his New York offices in 40 East 34th St.

The Dura Beau finishes are a development of Scholler Brothers, Inc, Philadelphia.

The finish, said to be applicable to almost every fiber and fabric construction, has been undergoing extensive tests and is now being released to selected plants under quality and trade mark control agreements. There are no royalties nor surcharges associated with the use of the finish, according to Scholler Brothers, Inc.

●

11th Semi-Annual Meeting and Conference, MCA

The 11th Semi-Annual meeting and Midyear Conference of the Manufacturing Chemists' Association, Inc, will be held Nov 21 in New York.

The program, designed to interest senior and junior executives, departmental and staff personnel within the member-firms, will consist of a series of six panels on a wide variety of management topics.

Valdese

A PRIME EXAMPLE OF GROWTH

From a modest beginning thirty-five years ago, Valdese has constantly expanded to its present capacity of 250,000 pounds weekly production of high quality dyed and bleached yarns for the knitting and weaving industries.

Valdese President, Earl Spencer, says—"Nothing but the best is good enough for our customers, and in order to obtain superior results we must have superior equipment. We started with Gaston County and we have never had any reason to change."

Latest additions to Valdese production facilities include a 1200 pound dyeing machine and three static pressure rapid dryers. They now have 28 dyeing kiers and sufficient drying to balance their production and render exceptionally fast service to customers.

40th ANNIVERSARY

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Stevens and Enjay Purchasing National Plastic Products Co

Enjay Chemical Company, a division of Humble Oil & Refining Co; J P Stevens & Co, Inc, and The National Plastic Products Co have announced that Enjay and Stevens are purchasing the operating assets and facilities of National Plastic. For this purpose, Enjay and Stevens have formed a new, jointly owned company, which will continue the National Plastic name and its present management.

Enjay, the chemical marketing division of Humble, and Stevens, a prominent textile company, have been engaged for more than a year in a joint research project to develop the manufacture and utilization of textile fibers from polypropylene plastic. A jointly owned pilot plant is in operation at Stevens' Garfield, NJ, research laboratory.

The companies believe that a combination of Stevens' knowledge in conversion of synthetic fibers to textiles, Humble's skills in synthetic polymer chemistry and manufacture, together with National Plastic's operating and mechanical experience in fiber manufacture will utilize complementary abilities to accelerate commercial developmen of polypropylene and other new fibers.

Enjay, which has its headquarters in New York, entered the plastic field last year with the introduction of Escon polypropylene, which is produced at Humble's Baytown, Texas, polyolefin plant. The Humble Company has become a major producer of petrochemical products which are sold through Enjay.

Stevens, also with headquarters in New York, is one of the oldest and most diversified textile firms in the US. The company, an important producer of all types of man-made fabrics, also produces a wide range of woolen, worsted and cotton fabrics.

National Plastic Products Co's manufacturing facilities at Odenton, Md, will be used by the joint company as the nucleus for development of the polypropylene fiber operation. The National Plastic Products Company is a privately owned company organized in 1941. It manufactures a diversified line of plastic filaments of saran, polyolefins and nylon, Nevamar laminates, molded products and extrusions. The company operates a wholly owned subsidiary, Richmond Plastics Ltd, of Richmond, PQ, Canada. In addition to offices in New York, the company maintains offices and warehouses in Long Beach, Calif, Burlingame, Calif, Portland, Ore, Denver, Colo, Chicago, Ill, Miami, Fla, and has a warehouse in the process of construction in Arlington, Texas.

National Plastic is now in commercial production of polypropylene monofilaments, and this operation reportedly will be further expanded to include multifilaments, staple, and textile fibers. Stevens and Enjay believe that polypropylene, with its outstanding strength, resilience, high covering power, and low cost, will be an important synthetic fiber of the future. The material has already gained wide acceptance in the rope field, and polypropylene filament is now being used in webbing for out-door furniture, automotive fabrics, and various industrial applications.

●

USTC New Chicago Lab

The United States Testing Company, Inc, will officially open its new Chicago Branch Laboratory on October 2. Located in downtown Chicago in the Board of Trade Building, the offices will occupy a first floor space at 141 West Jackson Boulevard.

Initially, the principal activities of this branch will be a sales office and psychometrics testing station. Plans for the near future incorporate the establishing of a physical testing laboratory.

●

Cyanamid's Melamine Plant in England on Stream

American Cyanamid Company's new melamine plant in Gosport, England, has gone on stream.

The plant is Cyanamid's first general chemicals production unit in Great Britain. The annual output of the plant is expected to be about 3,000 tons.

The plant, operated by Cyanamid of Great Britain, Ltd, was built at a reported cost of approximately $500,000.

The prime use of the melamine crystal is in the production of resins which are utilized by the textile, paint, and paper industries in Great Britain. Other uses include the manufacture of laminates and molding powders.

"Wash-Wear" Outlook for the 60s Offered

"The most promising single contender for supremacy in the 'wash-wear' field for the sixties will come from a host of chemical cross-linkers for cellulosic fibers either now available or in the process of development. The winner for the long haul is not known today nor will the issue be settled in the coming months. The whole crux of the matter is finding the best chemical cross-linker that achieves high fabric performance ratings with minimum adverse effects upon the fabric's wearing qualities".

This was the basic tenet of a paper "Chemicals in the 'Wash-and-Wear' Field" delivered September 8 at the 140th Meeting of the American Chemical Society, Division of Chemical Marketing and Economics, by Francis K Burr, senior research associate, Fabric Research Laboratories, Inc.

He stated that, during the past ten years the textile industry has experienced a vast upsurge in technological advance. Synthetic fiber development, nonwoven innovations, new dyestuffs and finishing auxiliaries, new and improved "wash-wear" finishes, mechanical bulking of thermoplastic fibers are but a few of the most important advances he cited.

"Not the least of these is the development of the 'wash-and-wear' fabric field," Mr Burr stated. "This field is divided into two parts. The first involves the new synthetic fibers which have built-in 'wash-and-wear' characteristics. The second involves the field of the cellulosic fibers (cotton and rayon) which comprise more than 70 percent of the fiber market and whose fabrics have to be modified by chemical treatment to yield 'wash-and-wear' properties. Over the past ten or fifteen years there has been a tremendous scramble among the producers of chemicals for the best finishing agents for the cellulosic fabrics in order that their product might capture the lion's share of this growing market.

"There has been much talk in recent years about resins, nonresins, cross-linkers, and chemical reactants. Suffice it to say that all of the agents used whether resinous or nonresinous are involved in cross-linking and this is the key to the picture. The best agent obviously will be the one which produces the best 'wash-wear' performance, and at the same time overcomes some of the problems associated with chemical modification, namely losses of tear and tensile strength as well as abrasion resistance.

"The big question now is which of the cross-linkers will succeed! Will the exotic and expensive materials such as the vinyl sulfones, the epoxides, and the epichlorhydrins win the battle or will the victor's wreath go to the very simple materials such as the modified ureas or even simple formaldehyde?

"Clearly the techniques and applications are becoming more sophisticated and success will come to the company with the greatest know-how and the ability to execute the most effective development programs".

●

Bancroft to Serve as International Licensing Agent for Certain FRL Patents

Joseph Bancroft & Sons Co, Wilmington, Del, and Fabric Research Laboratories, Inc, Dedham, Mass, have completed negotiations and reached an agreement whereby Bancroft becomes the exclusive international licensing agent for certain patents owned and controlled by FRL.

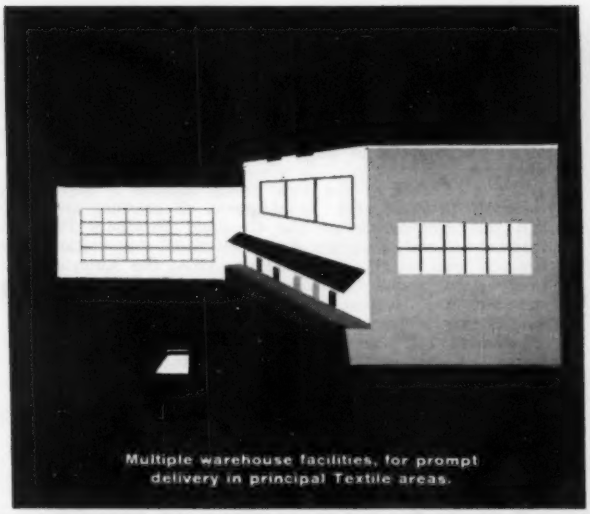
The patents involved reportedly relate to methods for treating fibers, filaments, and yarns of all types. In addition to the licensing plan, the two companies have also established joint research and development programs in the field of bulk fibers, the results of which will be further developed for use in the presently expanding Ban-Lon program.

●

CCDA Fall Meeting

The Commercial Chemical Development Association's Fall meeting will be held October 18 and 19 at the Palmer House, Chicago, Ill, beginning with a social hour the evening of the 18th. The theme of the meeting is "Economic Evaluation in New Project Appraisal." Talks will concentrate on the question of what commercial chemical development operations require by way of economic evaluation in a new project and how the economic evaluation information should be regarded.

According to George Rieger, program chairman, the program is intended to stimulate creative thinking and open discussions at the meeting. Nationally known figures in the chemical industry will speak.



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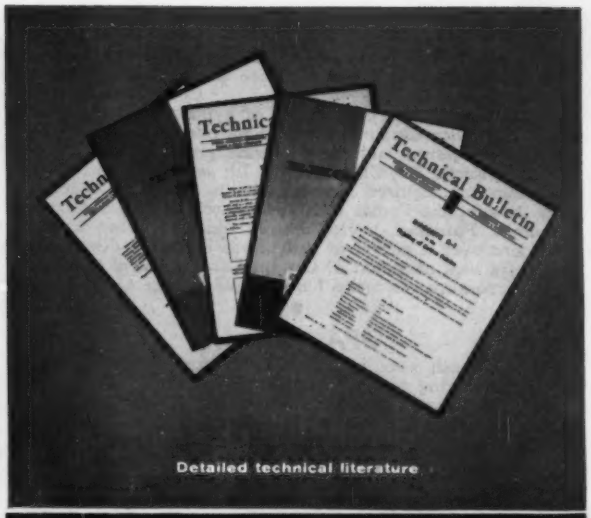

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CCA Acquires Lebec Chemical

The board of directors of Catalin Corporation of America has ratified the acquisition of Lebec Chemical Corp, located at Paramount, Calif.

Lebec manufactures a variety of synthetic resins, which fit in well with Catalin's list of urea, phenolic, cresylic, resorcinol, melamine and acrylic resins, produced in its three plants at Fords, NJ; Calumet City, Ill; and Thomasville, NC.

Catalin has acquired not only all the assets of Lebec but also those of the Pomar Corp, owner of the property.

John C Plummer, principal stockholder of Lebec and its president over a period of years, was elected a director as well as a vice president of Catalin Corporation of America. He will continue to make his headquarters in California.

●

GPA Awards

For the tenth year, annual awards to recognize scientific advances relating to glycerine and its derivatives have been announced by the Glycerine Producers' Association.

Two awards, each carrying a $500 stipend, will be made for 1961, one for work in the basic science area, and one for application advances. Nominations are requested prior to November 1, 1961, to be made by the researchers themselves, or by others familiar with their work. Nomination blanks are available from the Association office at 295 Madison Avenue, New York 17, NY.

Reason for the dual award, according to E Scott Pattison, association manager, is the fact that many nominations for highly meritorious work fall in fields of biochemistry, cell physiology, nutrition, etc, apart from the commercial utilization of glycerine. It is hoped to encourage recognition, both of this academic work and also of developments in the field of resins, toilet goods, and product conditioning in which glycerine is or may later be applied.

The awards are based on recent publications, patents, or studies awaiting publication, and do not require a specially prepared paper. Nominations will be judged by an inpendent panel of three judges.

●

Enjay Announces Price Reduction for Coating Resin

Enjay Chemical Company has announced a reduced price schedule for Buton 100 resin, an all-hydrocarbon butadiene-styrene copolymer. The new price schedule, representing an across-the-board reduction of three cents a pound and effective immediately, is as follows:

Tankcar quantities	$0.320 per lb
Carload drums	0.345 per lb
Ten drums to truckload	0.350 per lb
One to nine drums	0.355 per lb

Prices are quoted for 100% solids, fob supply point with minimum transportation costs allowed and prepaid to destinations within the continental United States, exclusive of Alaska.

●

8th Canadian Textile Seminar

Plans for the Eighth Canadian Textile Seminar, major biennial project of The Textile Technical Federation of Canada, are proceeding under the direction of H C Mersereau, Canadian Celanese Ltd, Montreal, Que, newly appointed general chairman.

Held biennially since 1948 at Queen's University, Kingston, Ont, the Eighth Seminar will be held September 5, 6 and 7, 1962, with registration taking place on the evening of September 5. Seminar sessions will be conducted morning and afternoon on Thursday and Friday, September 6 and 7.

A departure from past procedure will be the Federation luncheon, scheduled for September 6, at which the keynote address will be delivered and the Federation's Meritorious Service Award will be presented. Chairman of the Thursday luncheon will be A Harold Miller, president, The Textile Technical Federation of Canada. A prominent world textile authority will deliver the keynote address.

The Seminar is divided into five sections: Conversion of Fibers into Yarns; Conversion of Fibers and Yarns into Fabrics; Dyeing and Finishing; Mill Supervision, and Knitted Fabrics.

A total of 24 papers will be delivered and will be preprinted in the Seminar Book of Papers, which will be distributed to registrants on Registration Night, Wednesday, September 5, 1962.

AHA Affiliates with Institutional Research Council

The American Hospital Association is the latest national trade association to become affiliated with the Institutional Research Council, Inc—a new organization serving the needs of a diverse group of large consumers of textiles and other products.

The objectives of the new group include a coordinated research program, the development of product standards and the sponsorship of the Certified Products Program, formerly operated by the American Hotel Association. The Council was jointly organized by AHA, the American Library Association, the American Motor Hotel Association, the Hospital Bureau, Inc and the National Executive Housekeepers Association, Inc.

In addition to these groups, its original membership comprises the Association of College Unions, the Catholic Hospital Association of the United States and Canada and the National Association of Hospital Purchasing Agents.

Inquiries may be addressed to the Institutional Research Council, Inc, 221 West 57th St, New York 19, NY.

●

News of Soviet Science and Technology

The development of Soviet science and technology is a matter of interest to industrialists throughout the world. A continuous watch on Russian technical progress is maintained by the United Kingdom Department of Scientific and Industrial Research, and reported in its Russian Translating Programme.

Seventeen of the leading Russian technical journals are translated into English and published every month by British research associations and scientific societies for the Department. These provide up-to-the-minute information on Soviet progress in textiles, chemistry, rubber and plastics, etc. For example, Iz Vuz Tekhnologiya Tekstil'noi Promyshlennost (*Technology of the Textile Industry USSR*) starts with Russian January-February 1960 issue. Orders to The Textile Institute, 10 Blackfriars St, Manchester 3, England. Annual subscription rate: $21.00 ($15.25 to college libraries).

The Department also sponsors the translation and publication of Russian technical books, and each year places on sale translations of hundreds of technical articles. These translations are obtainable from the new National Lending Library for Science and Technology, recently established in Britain. These activities are part of a joint translating programme operated by the DSIR in cooperation with the U S National Science Foundation.

Inquiries should be addressed to The Director, National Lending Library for Science and Technology, BOSTON SPA, Yorkshire, England.

●

Putnam Reassigns Personnel

Putnam Chemical Corporation recently announced the reassignment of personnel from Beacon, NY, to Charlotte, NC, where the company is moving its main office. Temporary offices will be located at 1229 W Morehead St, pending completion of construction of offices, laboratories, and plant facilities later this year.

Among those moving to the Charlotte offices are *Leon E Moody*, executive vice president and general manager; *Erhard Schober*, technical manager; *Arthur Davis*, technical service coordinator; *Jim Hopwood*, chief chemist in charge of technical service laboratories; and *Milton Charatz*, technical demonstrator.

George J Motz has been promoted to assistant manager of the New York-Philadelphia sales district for Becco Chemical Division of FMC Corporation.

Mr Motz has been a sales representative for Becco in this same territory since 1957, and will continue to make his headquarters in the Division's New York district office in the Graybar Building.

●

SURDD Names Two New Advisers

John T Wigington has accepted a post as adviser, and *M Earl Heard*, as an adviser on cotton utilization research, to the Southern Utilization Research and Development Division of the U S Dept of Agriculture.

Mr Wigington is now director of the Division of Technical Service for the American Cotton Manufacturers Institute, Inc, Clemson, SC.

Mr Heard is vice president in charge of research for West Point Mfg Co, West Point, Ga.

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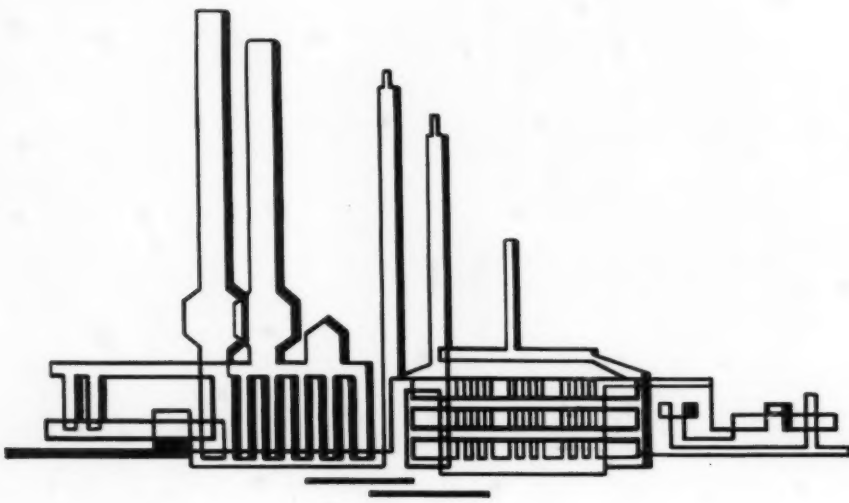

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EDWARD ROBINSON SCHWARTZ, 62, noted textile engineer, head of textile technology at Massachusetts Institute of Technology, and Olney Medalist, died July 27 at Notre Dame Hospital, in Biddeford, Me, after suffering a heart attack at his summer home in Ocean Park, Me.

In addition to his position as head of the division of Textile Technology in the Department of Mechanical Engineering at MIT, Professor Schwartz was in charge of the Samuel Slater Research Laboratory.

A 1923 graduate of MIT, he became an instructor in 1925, and in 1937, a professor. He served during World War II on a special committee for liaison between the Army Quartermaster and the synthetic fiber industry.

Professor Schwartz did much to demonstrate the wider application of the microscope to textile work, especially in the area of fiber properties. He also evolved a method in determining the maturity of cotton fibers, the optical properties of textile fibers, the quantitative determination of yarn twist under low magnification, the analysis of fiber, yarn and fabric defects, especially through the use of photomicrography. Included in the concepts introduced by him was that of the physical testing techniques such as the MIT abrasion tester, the Drapemeter developed under the sponsorship of the AATCC, a photoelectric twist tester, resilience testing machines, and among the electronic control devices, the high speed tensile testing machine whereby test samples can be investigated to rupture in a small fraction of a second. The time factor in textile testing, the "memory" of textiles, and the application of simplified mathematics to the solution of complex problems were also included in his concepts.

EDWARD R SCHWARTZ

Professor Schwartz developed a graduate school curriculum designed to prepare students in various fields of research activities in the textile industry. His method of lecture and laboratory procedure in the instruction of textile microscopy became standards in many other colleges. During recent years he trained many engineers now in key jobs in textile laboratories throughout the world. He was also a consultant on new problems relating to the use of synthetic fibers.

A founding fellow of the Textile Research Institute, he also served as its vice president, and directed editorial policies for its publication, *Textile Research Journal*. In addition, he was a Fellow of the British Textile Institute and the American Association for the Advancement of Science.

NEW PRODUCTS AND DEVELOPMENTS

Interchem Hisperse Dyes

A new class of disperse dyes for synthetics was announced recently by Interchemical Corporation's Color & Chemicals Division, Hawthorne, NJ. The extra-fine particle size dyes that comprise this new series are known as Interchem Hisperse Dyes.

Interchem Hisperse Dyes were developed originally for use in the pad-dyeing of synthetic fabrics; they are now being employed successfully on a commercial scale for processing acetate, triacetate, and polyamide fabrics, it is stated. Among the advantages cited by Interchemical Corp for the use of these dyes in pad-dyeing synthetics include the following:

1) many fabrics can be dyed in the greige, eliminating a separate boil-off operation;
2) simultaneous scouring and development of the final shade is carried out later in jigs, boxes, or other suitable equipment;
3) dyeing time is reduced, which results in increased production; also, reduced processing often results in improved hand;
4) shading from selvage and from end to end is minimized;
5) when properly applied, there is no tailing off of shades;
6) seam bar marks are virtually eliminated; and
7) excellent penetration is obtained on tightly woven fabrics; minimizes surface dyeing.

It is claimed that, because of their unique dispersion and excellent all-round dyeing properties, Interchem Hisperse Dyes have also been found advantageous for processing acetate, triacetate, and polyamide fabrics and blends by conventional dyeing in jigs and open Burlington Beam Units.

There are now eleven Interchem Hisperse Dyes available in commercial quantities. They are marketed in a dry, dedusted, concentrated powdered form. With these dyes, a wide range of shades reportedly can be obtained, ranging from pastels to blacks, navies and dark browns. A number of other dyes are now in various stages of development for inclusion in this series.

•

Details on Finishing Creslan Tubular Knit Fabrics Published

The first technical details on finishing fabrics knitted from yarns of Creslan acrylic fiber have been compiled by the Fibers Division of American Cyanamid Company following mill evaluation.

Discussing finishing procedures contained in a new technical bulletin, Bertram Sternlieb, technical service representative, notes that yarn-dyed and piece-dyed Creslan tubular knit cloths may be finished without special machinery or chemicals.

Commenting on wetting-out procedures for Creslan tubular knits, he suggests using a dye box large enough to accommodate the number of fabric pieces to be finished, remembering that "abnormal deviations in goods-to-liquor ratio will alter the effectiveness of the finishing."

Scouring procedure for Creslan acrylic knits is done at 130°F using a nonionic detergent, 1 to 2% owf for 20 minutes. Mr Sternlieb declares that the percentage of detergent will depend on the yarn spinning route and as well as fabric construction.

Rinsing is done while goods are in motion by overflowing with the bath temperature at 90-110°F, he says, suggesting a pH of 6 to 6.5.

Softeners may be added after rinse water has been removed and replaced with fresh water. Mr Sternlieb suggests a compatible cationic softener (0.5% to 2% owf) for use of Creslan tubular knits. Following application of the softener, the machine is run for 15 to 20 minutes and the fabrics are removed before emptying the bath.

Extracting may be done through the use of centrifugal extractor or by using rubber-covered rollers if fabric texture permits.

Mill trials have shown that in order to prevent wrinkling, damp goods should be dried as soon as practicable. Overnight storage before drying should be avoided, the Cyanamid spokesman cautions.

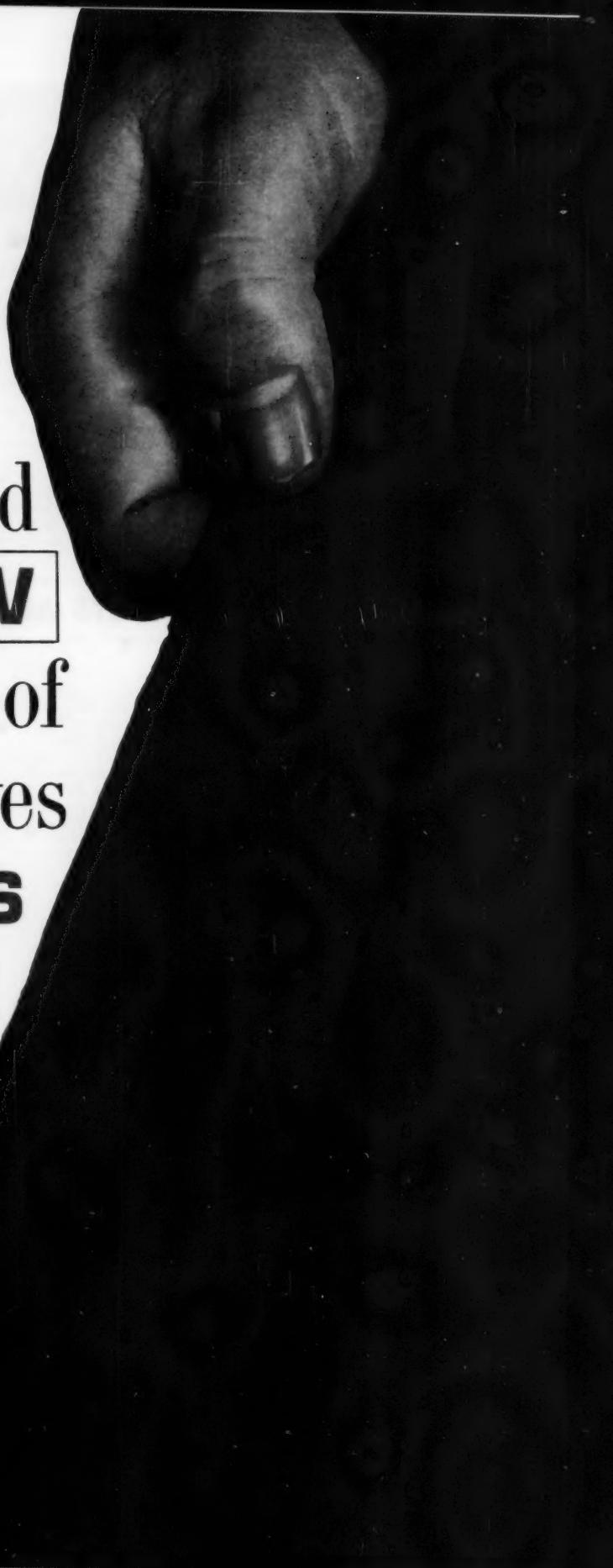
If a drum dryer such as Tube-Tex Reelax-Jet is used, adjustments can be made in the drum speed, the temperature and the speed of the overfeed mechanism. In single-machine or tandem use, the temperature should be set to 180°F. A drying speed of five yards per minute with 10% overfeed is recommended, Mr Sternlieb notes. Heavier, tighter fabrics require less overfeed and longer drying cycles.

If a loop-type dryer is used, care should be taken to allow the fabric to enter the machine with as little tension or drag as possible, Mr Sternlieb says. Flat folded fabrics are recommended for proper feeding of the loop dryer.

Mr Sternlieb reports that excellent results have been obtained with a Tube-Tex tensionless calendar. "Tubular knitted fabrics made from Creslan acrylic fiber require very little steam to bring them out to normal width and to remove wrinkles."

In summary, Mr Sternlieb observes, "fabrics knitted from Creslan yarns, like any other knitted cloths, are finished in order to remove impurities, to relax the yarn in the stitch formation, to enhance the character of the fabric and to achieve uniform width by steaming. Creslan knits can be finished on conventional equipment with slight modification of accepted mill practices."

Another
INTERCHEMICAL DEVELOPMENT!



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- Side - To - Center
- End - To - End

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SAVE MONEY
IMPROVE QUALITY

Many leading dyers have proved Hisperse Dyes "mill-worthy" on a production basis for pad dyeing acetate, triacetate, and polyamide fabrics.

Major advantages include:

ECONOMY—Fabrics can frequently be dyed in the greige, eliminating boil-off time. Dyeing time, steam costs, and use of auxiliary products are reduced. Also, reduced processing often improves hand.

UNIFORMITY—Minimizes shading from side-to-side, side-to-center, and from end-to-end of a run. There is no tailing off of shades. Seam bar marks are virtually eliminated.

EXCELLENT PENETRATION—Even on taffetas and other tightly woven fabrics; minimizes surface dyeing.

Because of their unique dispersion and excellent all-round dyeing properties, Interchem Hisperse Dyes have also been found advantageous for processing acetate, triacetate, and polyamide fabrics and blends by conventional dyeing in jigs and open Burlington Beam Units.

For full information on Interchem Hisperse Dyes, write or phone our office nearest you.

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Perapret HV

Badische Anilin- & Soda-Fabrik AG, Ludwigshafen am Rhein, West Germany, has placed Perapret HV on the market, a new type of resin finish for textiles. The product is said to be a dispersion of plastics containing reactive groups, and is recommended by the company mainly for use in the resin finishing of cellulosic fabrics. Perapret HV is said to improve the crease-recovery angle, and also the tensile and tear strength and the abrasion resistance. In combination with the Fixapret and Kaurit brands of BASF, it is fixed on the fiber with reportedly good resistance to washing at the boil. It reportedly improves the crockfastness of dyed shades. Perapret HV is also recommended by BASF for increasing the firmness of pile yarns, for back finishing and for coating. The product can be applied in large quantities without exerting any marked influence on the hand, it is claimed.

Further information may be obtained from Putnam Chemical Corp, Beacon, NY.

●

Pyrocrest

Pyrocrest, an organo-phosphate compound, is being marketed by the Crest Chemical Corporation, 225 Emmet St, Newark, NJ, as a flame-retarding agent. This product is said to be a water-soluble, water-white clear liquid of low viscosity with remarkable ability to stop both flaming and smouldering or glowing after the source of the flame is removed.

Pyrocrest reportedly will not cause effervescence or salt blown on aging when used on fabric or paper, and is said to impart a soft hand. It is said to have penetrating properties to assist in the impregnation of the material being treated.

Pyrocrest is suggested by the manufacturer for the flameproofing of cotton, wool, and vegetable fibers in amounts varying from 10% to 30% depending upon the construction type of material being flameproofed.

●

New Dyestuffs from Farbwerke Hoechst

Farbwerke Hoechst AG, Frankfurt (M)-Hoechst, W Germany, has announced several new dyestuffs. Included in these is Indanthren Blue HCBR Colloisol, a homogeneous dyestuff said to produce clear reddish-blue shades. Main process: IW. It is marketed in finest-disperse form as Colloisol. In its application properties, it is reportedly very similar to the greener-dyeing Indanthren Blue HCBG. The new dyestuff is said to be highly suitable for all aspects of vat dyeing because of its reportedly fine dispersion and good temperature resistance. According to the company, washing styles, curtains and furnishing fabrics qualify for the Indanthren label provided that the specifications of the Indanthren-Warenzeichenverband eV are observed. The new product is said to be suitable for colored bleaching styles, if the standard precautions are taken. For further details, see Leaflet Hoe 2637 e.

Another of the new dyestuffs is Remazol Turquoise Blue G, reportedly interesting in shade and said to possess excellent fastness and processing properties. The new dyestuff is said to be suitable for the dyeing of natural and regenerated cellulose fibers in all stages of processing. Dyeing reportedly can be carried out by any of the Remazol padding and exhaust processes. The dyeings are said to be easy to rinse clean. Remazol Turquoise Blue G gives very good yields even by the one-bath pad batch process, it is claimed. The high resistance of the alkaline padding liquors is said to increase greatly the reliability of dyeings with Remazol Turquoise Blue G. According to the company, the new dyestuff is suitable for any of the Remazol printing methods. Ground dyeings reportedly can be discharged to a pure white. Among the characteristics attributed to the new dyestuff is its capability of being shaded with Remazol Blue R to yield redder shades and with Remazol Yellow GGL to produce greener shades. It is said that pure blue and green dyeings and prints can easily be obtained because of this characteristic.

Also new is Imperon Binder MGN, a new pigment binder. It is said to be particularly suitable in the dyeing and finishing of fully synthetic curtaining with pigments and disperse dyestuffs but to be equally successful on other fibers. A leaflet about the new product and its uses is available.

TECHNICAL LITERATURE

(Literature is available from sources listed in italics)

GELVA POLYVINYL ACETATE——*Shawinigan Resins Corp, Dept RH, Springfield, Mass*——This technical manual on the properties and uses of Gelva polyvinyl acetate is divided into four sections. Containing detailed specifications and physical characteristics on all homopolymer and copolymer resins, emulsions, solutions and spray-dried powders, the 40-page manual also provides data on the products' applications for textile coatings and other materials. Additionally, the manual contains formulations for selected applications intended to illustrate the versatility of polyvinyl acetate products.

●

SOAPS, DETERGENTS, CLEANING AGENTS——*10¢; Publications and Public Information Division, OTS, Washington 25, DC*——Bulletin SB-468, supplement to CTR-333, lists research reports of the Army, Navy, Air Force, Atomic Energy Commission and other Government agencies in addition to translations of foreign technical literature and Government-owned patents available for license on soaps, detergents, and cleaning agents. The brochure covers such topics as the industrial potential of radioisotopic methods in the synthetic detergent and soap industry and the effectiveness of detergents in removing radioactive decontamination. The bibliography lists reports added to the OTS collection during the period 1958 to June 1961. A complete list of over 200 OTS selective bibliographies may be obtained on request without charge from OTS.

●

UNITHANE ADHESIVE 200——*Thiokol Chemical Corp, 780 North Clinton Ave, Trenton, NJ*——Bulletin UC-2 offers details of this new, stable, one-package urethane adhesive for foam-to-fabric bonding.

Sections of the bulletin are devoted to application advantages; typical physical properties; curing temperatures; laminating fabric-to-foam; effects of drycleaning; solvents; resistance to solvents, oils and chemicals; and toxicity, handling and storage. Also included are tables on the effects of chemicals on Unithane Adhesive 200, and the effects of oils and solvents on the product.

●

VALSOFT PE POLYETHYLENE EMULSION——*Valchem, 1407 Broadway, New York 18, NY*——Bulletin No. T-410 offers data on Valsoft PE, a pure polyethylene emulsion which is claimed to be indefinitely stable. It is claimed that, when the product is used as a straight finish, or together with synthetic resins, the wearing properties of the treated fabrics are vastly improved, a superior hand results, and needle damage from high-speed sewing machines is virtually eliminated.

Valsoft PE Polyethylene Emulsion is said to upgrade treated fabrics in abrasion resistance by 100 to 300% and tear strength by 50%, while reducing electrostatic charge.

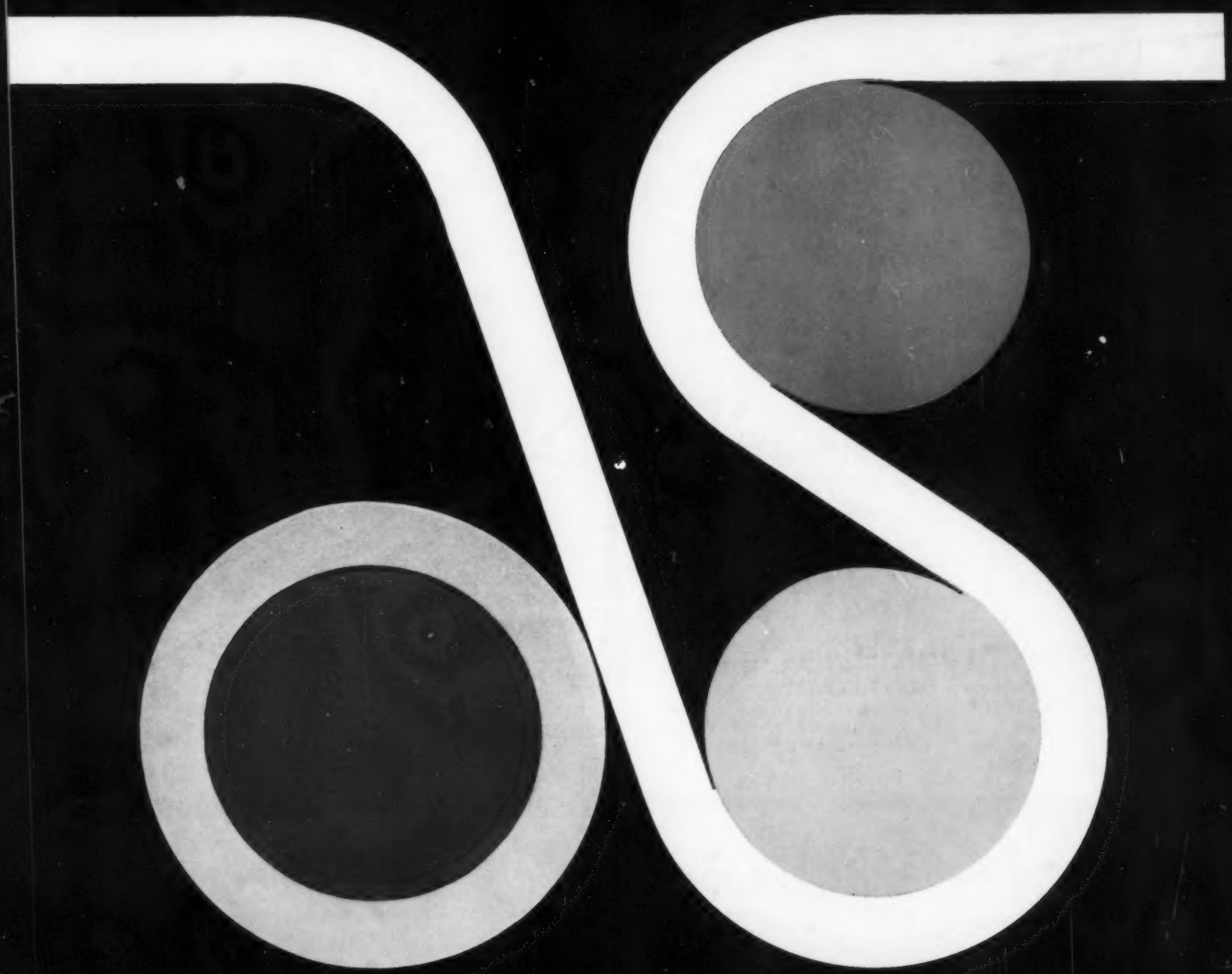
The bulletin lists Valsoft PE's major properties, ie, composition, ionization, active ingredient, appearance, pH, specific gravity at 25°C, solubility in water, and chemical stability.

●

VALSOFT PE-45 POLYETHYLENE EMULSION——*Valchem, 1407 Broadway, New York 18, NY*——Bulletin T-410/A offers product specifications for this entirely new polyethylene emulsion of exceptionally high concentration, which is now in production at Valchem's Langley, SC, plant. Total solids content of this product is listed as 45%. Polyethylene solids content is 35%.

Nonionic in nature, this white, viscous emulsion is said to be indefinitely stable and readily dispersible in water. It is said to be compatible with alkaline, neutral and acidic compounds; resins, catalysts, starches, gums, and other finishing materials.

Supplied in tank trucks and 55-gallon drums, the product weighs 8.2 lbs/gal, has a specific gravity of 0.986 at 25°C, and a pH of 7.7 (1% solution).



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Titre, °C.	55.0—55.5	4—6
Titre, °F.	131.0—132.0	39.2—42.8
Color 5¼" Lovibond Red*	0.3 max.	1 max.
Color 5¼" Lovibond Yellow*	1.0 max.	10 max.
% Unsaponifiable		1.5 max
Saponification Value	209—211	198—203
Acid Value	208—210	197—202
% F.F.A. as Oleic Acid		99 min.
Iodine Value (WIJS)	0.25 max.	94 max.
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1962 AMERICAN DYESTUFF REPORTER

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FEBRUARY	5-19
MARCH	5-19
APRIL	2-16-30
MAY	14-28
JUNE	11-25
JULY	9-23
AUGUST	6-20
SEPTEMBER	3-17
OCTOBER	1-15-29*
NOVEMBER	12-26
DECEMBER	10†-24

. . . AND SPECIAL ISSUES

*AATCC CONVENTION ISSUE
October 29, 1962
Advertising Closing Date October 8, 1962

The 40th Convention of the American Association of Textile Chemists and Colorists will be held at the Atlanta Biltmore Hotel in Atlanta, Georgia on November 14-17, 1962.

A very large attendance of mill personnel is anticipated (perhaps the largest in Convention history) inasmuch as it will be held in one of the most active textile mill centers in the United States.

We expect to publish one of the largest Convention issues in our experience and we suggest that all who are interested in "Selling the South" avail themselves of the unusual amount of intense readership that your customers and prospects will devote to this particular issue.

American Dyestuff Reporter's AATCC Convention Issue will contain details on all the many Convention events and technical sessions, plus special stories on awards and contests, and interesting background and historical data, and complete Convention program.

This is the big volume of the year. Therefore it must have a place on any proper advertising schedule directed to textile wet-processing plants.

ADVERTISING FORMS WILL CLOSE OCTOBER 8, 1962

†ANNUAL PROCESSING REVIEW NUMBER
Publication Date December 10, 1962
Advertising Closing Date November 19, 1962

After twenty-seven years this issue has become recognized as a "catalogue" of the latest developments in chemical research and equipment design available, in one issue, to the technical personnel of the textile wet-processing industry.

All new products developed in the year previous to November of 1962 will be listed in detail in this popular Annual Processing Review Number. Manufacturers of dyestuffs, chemicals, wet-processing machinery and instrument and laboratory equipment, etc., list their developments for the trade. This issue always produces a keen readership, and wise advertisers use it to tell their product and service stories dramatically and completely. Eager attention, plus long retention and use by mill readers make this Annual Processing Review number a necessary part of a complete 1962 schedule.

We suggest advertising representation with the use of copy that includes the complete line of those products that you are producing.

ADVERTISING FORMS WILL CLOSE NOVEMBER 19, 1962

CLOSING DATE for all issues is 3 weeks before publication date, for both copy and plates.
SHIP PLATES to American Dyestuff Reporter, 44 East 23rd Street, New York 10, N. Y., Phone SPring 7-9364.
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A History of the Ontario Section, CATCC———

(*continued from page 109*)

pleased to assist this worthy project in every way . . ."

At this juncture it is considered timely to interject a personal note. Searching through the records, including the minutes of this Association, now a quarter-century old, it becomes apparent that Mr Carney's report as retiring president, particularly his reference to the need for establishment of a textile school in Canada and his comments on textile education generally, were perhaps of more significance than was realized at the time.

Even though he expressed an urgency for the establishment of a textile school at the February 6, 1937, annual meeting, ten years were to elapse before this dream was realized and, during that decade, Mr Carney, officers and members of the Association, along with officers and members of the CATCC, Quebec Section, and of other textile technical associations, as yet unborn, were to expend many hours of effort and energy before the Provincial Textile Institute was opened in the city of Hamilton, Ont.

Consequently, it becomes readily apparent the Association "had a hand" in the establishment of organizations, institutions, if you will, which were destined, in later years to advance the cause of textile education in Canada.

NATIONAL COUNCIL, CATCC———Take the National Council, CATCC, for example. This coordinating body was born as a result of discussions initiated by the CATCC, Ontario Section, and its younger counterpart in the Province of Quebec. The establishment of the National Council was adequately reported in the April 15, 1938, issue of *Canadian Textile Journal*, and was published as part of a report on the second annual meeting and banquet of the Quebec Section. It is recorded that:

"An important event in the day's proceedings was the appointment of a National Council of the CATCC. A constitution has not yet been approved but the Council will have jurisdiction over the Ontario and Quebec Sections and any further sections which may be organized.

"It is the outcome of executive meetings of Ontario and Quebec officers and is regarded as essential centralization to broaden CATCC activities. Provisional officers appointed are as follows: E P Carney, president; S B Wood and R Buchanan, vice-presidents; R W Graham, secretary-treasurer. Council members: E Bradley, F W MacBeth and W Olpinski. The Council will hold regular meetings in Ontario and Quebec and will consider CATCC activities from the national viewpoint and will endeavour to strengthen and assist sectional work."

A TEXTILE FEDERATION———Furthermore, the Association's activities in connection with the establishment of Canada's first national textile technical federation resulted in the formation of what is now The Textile Technical Federation of Canada, the central liaison organization coordinating the activities of all the textile technological associations and societies in Canada. The February 17, 1939, issue of *Canadian Textile Journal* reported this now historic event as follows:

"A Federation of Textile Technical Associations of Canada was established on Saturday, February 4, at a special meeting held in the Royal Connaught Hotel, Hamilton, Ont under chairmanship of E P Carney, CATCC, Ontario Section.

"Provisional officers appointed are: E P Carney, president, and P W Webb, secretary. Members of the new Federation consist of the entire membership of the CATCC, Ontario and Quebec Sections, and the Textile Society of Canada. Provision is made in the constitution for additions to this membership, from both employers' and other organizations.

"The object of the Federation is to promote the interests of its members and coordinate their efforts. This work is regarded as particularly necessary at the present time, especially in regard to textile education, standards, publicity and related matters. Those present at this historic meeting and the organizations they represented are as follows:

"E P Carney, A Freeman, J P Redston, E Bradley, F W MacBeth, C B Musgrave, E Brandwood and W King, Canadian Association of Textile Colourists and Chemists; B X C Baily, H P Smith, A E Cherrington, W J Buck, Textile Society of Canada; W A Kennedy, Canadian Allied Textile Trades Association, and Dr P Larose, National Research Council, Ottawa, Ont.

"The Federation is considered to be the logical result of textile technical association development in Canada in the past few years. It will be recalled that the Ontario Section, CATCC, was established in 1935 and the Quebec Section, CATCC, in 1936. In 1937 the Western and Eastern Divisions of the Textile Society of Canada were formed. In 1938 there was a remarkable increase in the facilities available for technical training of employees, due largely to the efforts of the CATCC and Textile Society. Increased activity led to a demand for closer cooperation between the various groups and for uniformity of syllabuses, examinations, etc. It is in this direction and in matters of standards and research that the Federation is expected to prove most useful. The next meeting of the Federation will be held in Montreal in April . . ."

There is evidence today of ever-closer liaison between the TTFC and the Primary Textiles Institute. That this "togetherness" was envisioned many years ago is noted in an editorial which was published in the March 3, 1939, issue of *Canadian Textile Journal*. The editorial said in part:

". . . The Federation will perform a valuable and necessary function in coordinating the efforts of its members. Its powers will be enormously increased through collaboration with employers' associations represented in the Primary Textiles Institute. Now that the Federation is established the next step is to arrange a joint meeting with the PTI with the object of common action on some of the important technical problems of the industry.

". . . To the Federation's provisional president, E P Carney, and to officers of the CATCC and the Textile Society, great credit is due for establishment of the new body. It is certain that employers' organizations will cooperate with technical men in solution of common problems. There is a great opportunity for service which will strengthen the textile trade and increase its prestige among outstanding Canadian industries." It is of interest to note that E P Carney remained in office as president of the TTFC for ten years and did yeoman service during this formative and difficult period.

TEXTILE EDUCATION———Further proof—if indeed, such be needed—in the CATCC, Ontario Section's determination to advance the cause of textile education in Canada, this time through the medium of The Textile Technical Federation, is provided by a brief which was presented before the Justice Hope Royal Commission on Education in the Senate Chamber of the University of Toronto, in October, 1945.

On this occasion, the Federation was represented by its president, Mr

(*continued on page 150*)

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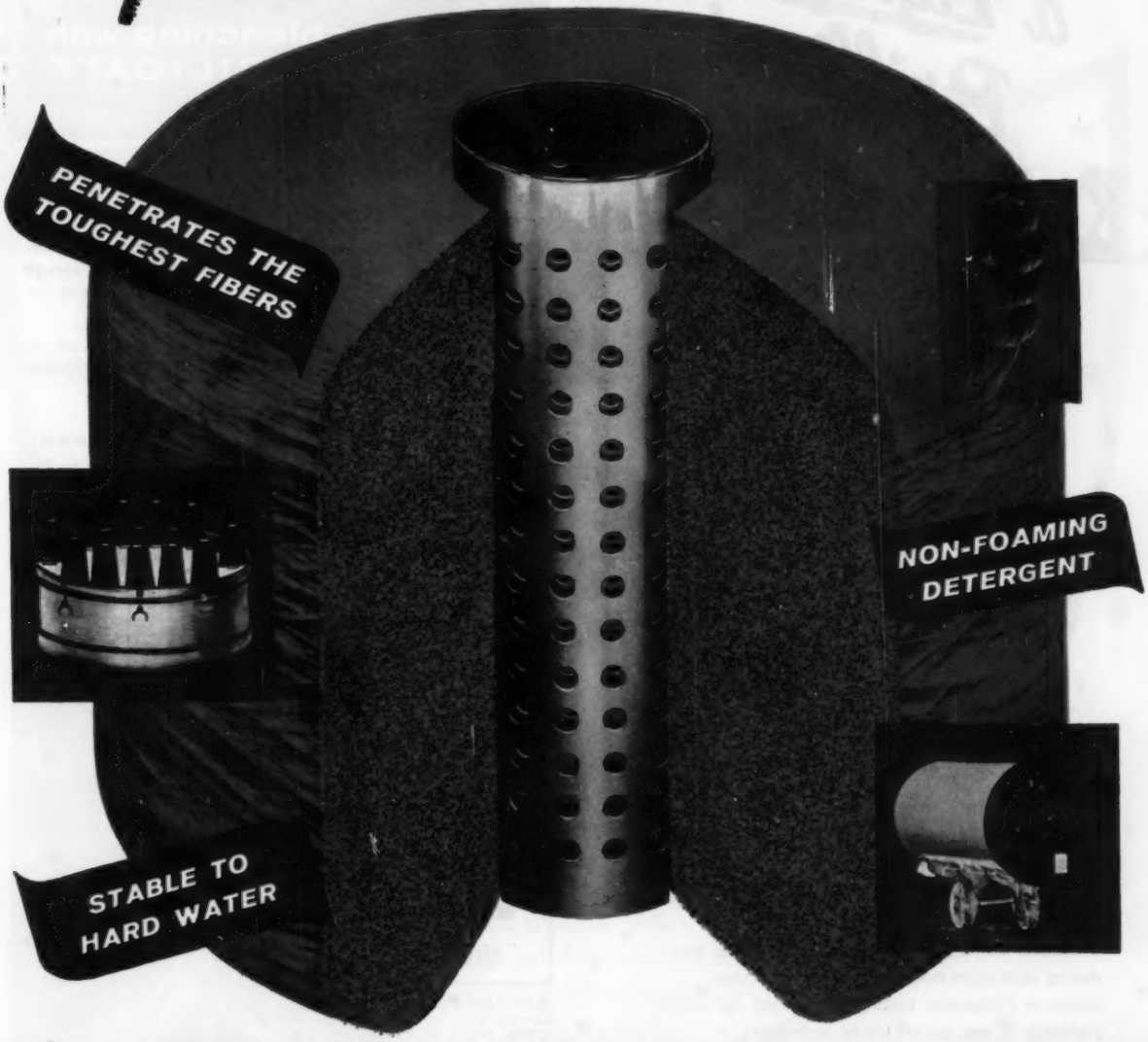

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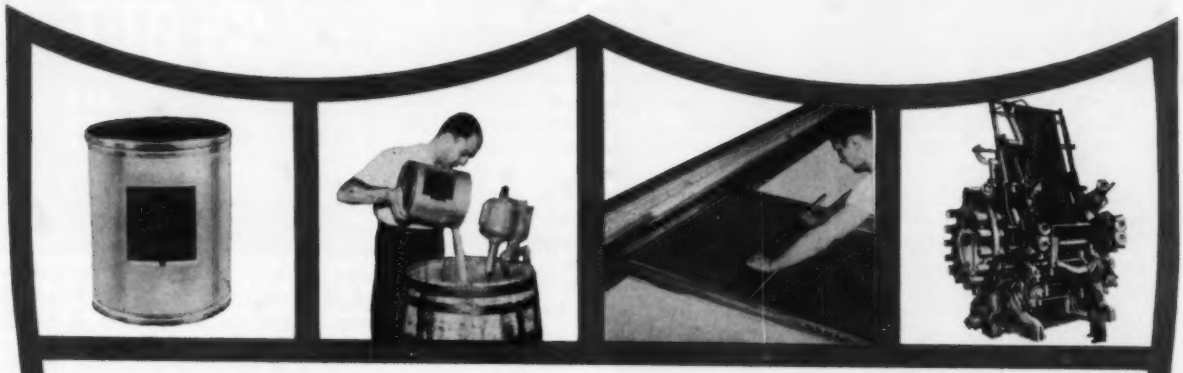

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A History of the Ontario Section, CATCC———

(*continued from page 146*)

Carney, and F W MacBeth, J P Redston, A E Cherrington and C V Grantham. The brief, read by Mr Carney, recommended establishment of complete educational facilities for textile personnel in Ontario; the Federation asked for a conference attended by textile executives, educationalists, etc, to discuss problems and report to the Commission, and that "the expansion of the textile industry in Ontario warrants Government aid and assistance on educational problems."

The brief declared that "the great and immediate need is the establishment of a Textile Institute to train technicians, chemists and engineers . . . the establishment of such an Institute in Ontario would provide a centre from which all other textile educational efforts would radiate. If His Majesty's Royal Commission on Education is favourable to the establishment of a Textile Institute by the Province, under the executive direction of the Provincial Department of Education, and plans for orderly expansion, it is submitted that arrangements should be made immediately for a Textile Education Conference to meet and report to the Commission . . ."

And so it came about that, two years later, the Provincial Institute of Textiles at Hamilton, Ont, was established. Shortly before the formal opening, J P Redston, chairman, Hamilton Sub-Committee, Primary Textile Educational Committee, writing the 18th edition of The Manual of the Textile Industry of Canada, said:

". . . The educational level of the Institute at Hamilton will be between that of technical school and university. It will fit into the existing scheme of education in Ontario and be administered by Provincial Educational authorities, but direction will come from the textile industry and a very close liaison will be established with the industry.

". . . The primary purpose of the Institute is to fit young Canadians for positions of responsibility in the textile industry, particularly at the technical level . . .

" . . . Such a Provincial Textile Institute should become a centre for meetings of technical groups and it may well be that future meetings of these groups could be held for two or three days in the summer time, at which informal discussions could be held . . . so that employees would return to their mills full of the latest trends in their particular line of work, and with new ideas which their own discussions had brought to light . . ." Elsewhere, Mr Redston stated:

" . . . The careful planning of these classes by the PTEC in Toronto and cooperation of the Hamilton Board of Education have been equalled by the active support and interest of all mills concerned. The auspicious beginning of this undertaking encouraged the Federation of Textile Technical Associations of Canada, with the backing of the Primary Textiles Institute, to prepare and present a brief before the Royal Commission on Education, stressing the need for a Provincial Textile Institute and asking for a Provincial Textile Educational Conference . . . and this led to the request that the Provincial Textile Institute be located in Hamilton . . ."

At the end of the summer of 1946, it was officially announced that the Provincial Institute of Textiles in Hamilton, Ont, would open for the initial 1946-47 session. Administrative officers of the Institute included: Hon George A Drew, Premier of Ontario and Minister of Education, and members of the board; L S Beattie, director of vocational education; Hugh H Lawson, York Knitting Mills Ltd, and C C Ashcroft, secretary, principal of the Institute.

Members of the first advisory committee included: D A Page, chairman, Mercury Mills Ltd; H B Bonner, Dominion Woollens & Worsteds Ltd; E P Carney, Textile Technical Federation; N B Eaton, Eaton Knitting Co Ltd; F W MacBeth, Textile Technical Federation; F Molineux, Trades and Labour Congress of Canada; J P Redston, Textile Technical Federation; D A Robinson, Barrister-at-Law; J Robinson, Textile Workers' Union of America, and C C Ashcroft, secretary.

It is of interest to note that in 1945, the year when the brief was presented before the Justice Hope Royal Commission and which led to establishment of the Textile Institute in Hamilton, the Quebec Textile School was established at St Hyacinthe, Que.

Thus 1945 was a year of significant development in textile education in Canada and in all this the Canadian Association of Textile Colourists and Chemists, Ontario Section, figured most prominently. What has transpired in the intervening 15 years is well known but, suffice it to say, that the Association's interest in the advancement of education has not waned, but has waxed stronged due to the efforts of its members to whom education is so very important a word.

TEXTILE TARIFFS———As has been pointed out, the Hamilton area at around the time of the birth of Canada's first textile technical association, was a thriving textile community. This is emphasized in the minutes of a meeting of the Association held on March 5, 1938.

At this time, the Association was concerned with textile tariffs and it was decided to send a resolution to Prime Minister W L Mackenzie King. Urging upon the Prime Minister that "nothing be done that will be detrimental to the employment of these workers who are dependent on a weekly pay envelope for the support of their families." A paragraph of the resolution made reference to members of the Association, in which connection the resolution read:

"It is in no sense a labour organization. It comprises a membership of about 225, or approximately 80% of those eligible for membership. These members have under their direction, or dependent on them, about 5,500 mill employees engaged in dyeing and finishing the products of the other 55,000 workers in the domestic primary textiles industry."

And so the work of this pioneer textile technical association continued and always with the accent on improving the lot of the textile technologist and furthering the cause of textile education generally. But what of the men who through the years contributed so much of their time, talents and energy in maintaining the stature of the Association so that it would continue to afford maximum benefits to its members and perform a real and continual service to the textile industry?

GROUP "STALWARTS"——Naturally enough, one cannot mention the names of every one connected with the Association, although each member must have played his part, otherwise the organization would have disintegrated long before it was 25 years old. However, there are some who have been active in the affairs of the Association throughout its life span to date. The organization's chief architect, E P Carney, has been mentioned. Then there is R W Graham.

Mr Graham was appointed secretary-treasurer at the first annual meeting on February 1, 1936, and served faithfully in that capacity for 12 years, relinquishing this arduous

(*concluded on page 152*)

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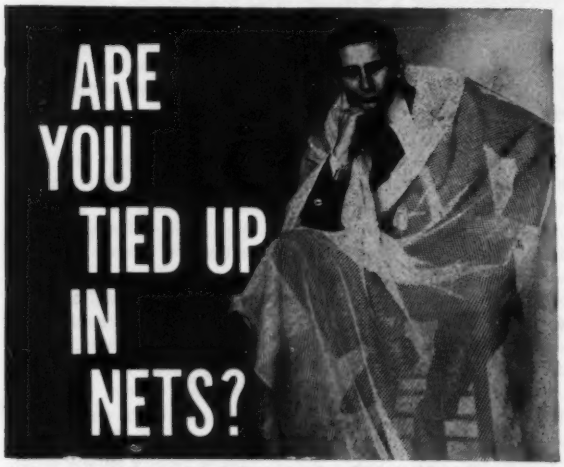

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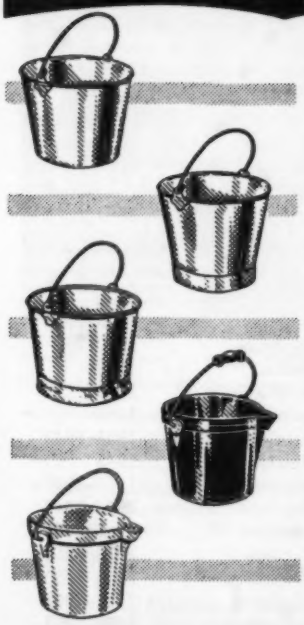

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A History of the Ontario Section, CATCC———

(concluded from page 150)

portfolio to become president in 1948. After serving for the customary two years, Mr Graham automatically became a member of the Executive Council and in 1951 was again persuaded to take on for one year the duties of secretary-treasurer. Thereafter and until 1955, he continued on Council and also for a time represented the organization on National Council, CATCC.

Just as active today in the affairs of the Association as he has been for many years is R F (Bob) Brown, the organization's "parliamentarian." Mr Brown was elected a member of the executive council in 1939. In 1943 he was elected vice-president. A year later he became president and continued in office for two years. A past president of the Association in 1946 and 1947, he was named as the Association's representative to The Textile Technical Federation and remained in this office from 1947 to 1955, inclusive. In 1947 he also represented the organization on the National Council, CATCC.

In addition to his work as TTFC representative, Mr Brown was also secretary-treasurer of the Association in 1948, 1949 and 1950. For the past two years he has been an auditor and is the unofficial comptroller of the organization.

A "canny Scot", Mr Brown's long and abiding interest in the welfare of the Canadian Association of Textile Colourists and Chemists, Ontario Section, has redounded to the benefit of the organization in many ways. A debater of note, he does everything according to parliamentary procedure, at the same time keeping a watchful eye on the treasury.

Another stalwart of the Association since inception was the late Robert Bain who was named honorary president of the Association at the first annual meeting and who retained that position with distinction until shortly before his death in 1946. Mr Bain was succeeded by the late F W MacBeth, who was one of the first auditors, and whose abiding interest in the field of education did so much towards the establishment of the textile school in Hamilton. Mr MacBeth was honorary president of the Association until shortly before his death in 1953. He, in turn, was succeeded by C B Musgrave, who has continued as honorary president since 1954. Mr Musgrave has been active in the affairs of the organization since the first annual meeting in 1936, when he was elected to the Executive Council, becoming president for one year in 1939.

Mention has also been made earlier of F E Lennard's association with the organization. Mr Lennard took on the job of auditor at the first annual meeting and continued in that financial capacity until the end of 1953. For much of that time he was ably assisted by Mansell Coole; before Mr Coole, by the late Mr MacBeth and for a short time by Jas Rowatt.

In the early days of the Association the president held office for one year, with the exception of E P Carney, who was president prior to the first duly organized annual general meeting in 1936. However, since then, and with few exceptions, the presidents have held office for two years. The Association has been singularly fortunate in its choice of senior officials. All these men, whether they have occupied positions of responsibility and trust in the Association or have represented the organization on other textile technological groups, have always had the best interests of the Association at heart. They have given unstintingly of their time and talents with no thought of personal gain. Thus, they deserve the thanks of all members for their sterling efforts and for the example they have set for others who will follow in directing the destinies of the Association in the years ahead.

A FINE RECORD———Here, then, is a summary—a thumbnail sketch, as it were—of the history of the first Canadian textile technical association, covering the initial quarter-century of operation.

As was noted in the introduction to this historical sketch, the city of Hamilton and surrounding area was a thriving textile community during the first several years of the Association's existence. Reference was made earlier of this fact when in 1938, for example, it was estimated the textile industry in the area provided full employment for upwards of 5,500 people.

Since World War 2, however, a radical change has taken place. The presence of heavy industry in Hamilton has resulted in a consistent rise in the cost of living. This has meant greater labor union activity leading to ever-higher wage levels. Thus, gradually, the textile manufacturing industry has been forced out of the area, and in some cases several textile mills have closed. The prime contributing factor to this sad state of affairs has been the ever-increasing volume of textile imports from abroad which has plagued the domestic industry for several years. Because of imports, more mills have closed their doors. Inevitably, then, this enforced contraction in the industry has affected the fortunes of technical associations in the contracting areas.

This is particularly true of this Association (and of its near-neighbor, the Textile Society of Canada, Western Division.) Membership rosters have declined to some extent, making it increasingly difficult for the Association to continue its work on such a broad scale. However, notwithstanding these problems, progress is still being made and enthusiasm still runs high. There is a determination among officers and members to carry on and sound plans are being made for the future in the light of existing circumstances.

The Association is proud of its heritage. Its accomplishments over the past 25 years have done much to strengthen the industry and assist it to weather the many storms of adversity with which it has been beset. On the other hand, the Association is appreciative of the support it has received from industry since inception a quarter of a century ago. It is realized that without such support its existence would have been precarious.

Consequently, it looks to the future with quiet confidence, secure in the knowledge that as long as the primary textiles industry in Canada is recognized as basic to the economy of the nation, and is accorded the support and assistance of which it is so deserving, the industry and its technical associations will move forward into broader fields of endeavor for the mutual benefit of all concerned.

* * *

Following is a list of presidents of the Ontario Section since its beginings in 1935:

E P Carney	1935-1936
R Buchanan	1937
A Freeman	1938
C B Musgrave	1939
E Brandwood*	1940
O C Pemberton	1941-1942
A G Melrose*	1943
R F Brown	1944-1945
D D Hay	1946-1947
R W Graham	1948-1949
G A Farley	1950-1951
C C Urquhart	1952-1953
John Wallace	1954-1955
Wm McCusker	1956-1957
A J Tigert	1958
N J Mohoruk	1959-1961
J C Mansfield	1961-

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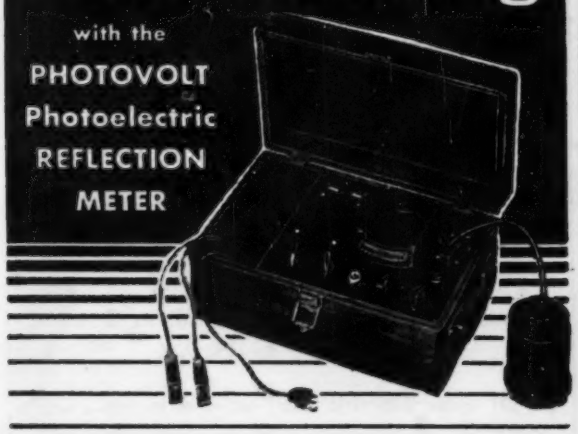

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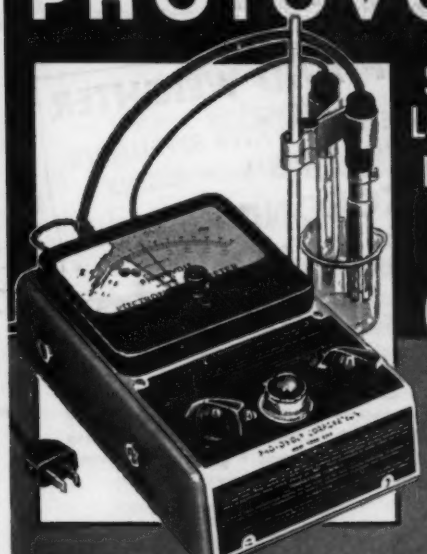

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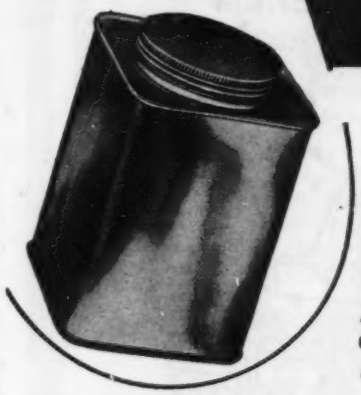

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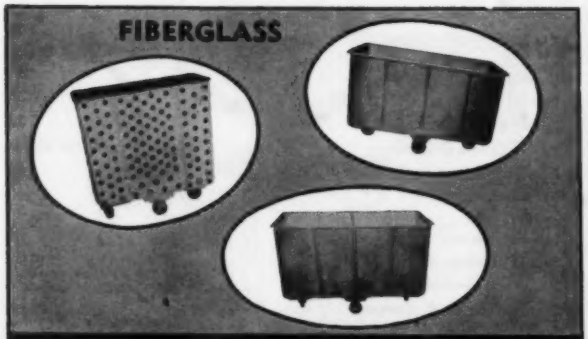

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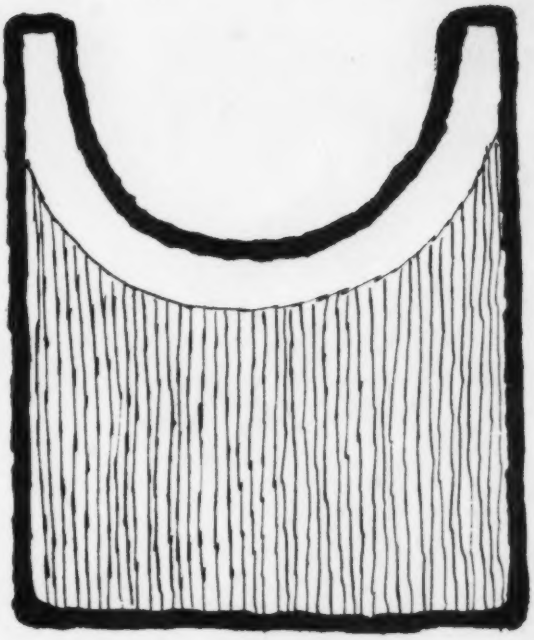

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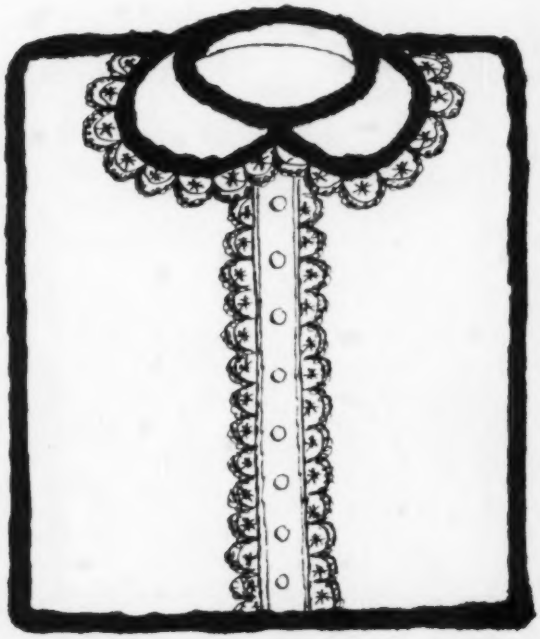

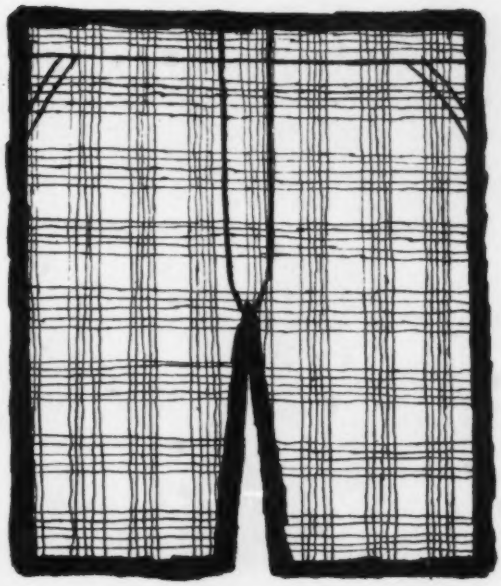

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C

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D

Discolite® (dĭs′kō·līte)

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A powerful reducing agent, stable at high temperatures. Widely used to effect reduction and solution of vat colors, and for discharge effects when applied to colored grounds. Effective when mixed with vat colors and discharge pastes wherever the reducing agent must retain its reducing power after being dried into the fabric.

Dispersall (dĭs·pûr′sal)

A long chain ethylene oxide condensate in the form of a colorless, neutral, somewhat viscous liquid. Fully resistant to hard water, and miscible with water in all proportions. A retardant and leveling assistant in vat dyeing.

Used widely as a dispersing agent in dyeing synthetic fibers with disperse colors and for fast color salts and bases in Napthol dyeing and printing.

Effective in stripping to prevent redeposition of the color on stripped goods.

N

Neowet (nē′ō·wĕt)

Complex Polyethelene Ether in the form of a pale yellow, slightly viscous liquid.

A non-ionic surface active wetting agent, effective at all temperatures. Completely compatible with enzymatic desizing agents and readily soluble in water. Contains 33 ⅓% active ingredients. Widely used in scouring all types of textile fabrics and for general wetting purposes.

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Organic Ether Sulphonate in the form of a water white slightly viscous liquid.

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Neozymes® (nē′ō·zīmz)

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Neozymes quickly remove all trace of starch glue or gelatin sizing without danger of damage to even the most delicate fabrics. For best results, use with NEOWET to speed saturation.

P

Parolite® (păr′ō·līte)

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Completely soluble in water. Leaves stripped goods soft, completely free of zinc dust and in most receptive condition for further processing. Often completely strips goods where other stripping agents fail. Very effective in discharge printing on acetate rayon.

V

Vatrolite® (văt′rō·līte)

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